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Draft
Environmental Impact Report

OCEAN BEACH PARK ESTATES

EE 78.178

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DRAFT ENVIRONMENTAL IMPACT REPORT

OCEAN BEACH PARK ESTATES

EE 78.178

Public Comment Period: 8 June 1979 to 26 July 1979

Public Hearing Date: 12 July 1979

REF 711.4097 Oc2d

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CHAPTER I
SUMMARY

A. PROJECT DESCRIPTION

Ocean Beach Associates (OBA), a limited partnership has submitted a Conditional Use application to the San Francisco Department of City Planning for a Planned Unit Development on the site formerly occupied by the Playland-at-the-Beach amusement park.

The development, tentatively named "Ocean Beach Park Estates," would include condominium units, subsidized senior citizen rental units, and related commercial retail, recreation, and parking facilities. Both public and private open space would be incorporated in the project. The objective of OBA is to develop residential housing on the site in an integrated, unified design. The project is being designed by the architectural firm of Sandy and Babcock.

The location of the proposed development is the three and one-half block area formerly occupied by the Playland-at-the-Beach amusement park. The site is located on four parcels designated Parcels 1-4. Half of Parcel-4, the northern block, has been authorized to be incorporated into the Golden Gate National Recreation Area (GGNRA) as a result of passage of the Omnibus Parks Bill (S 791). The EIR therefore addresses two alternatives for Parcel-4 in addition to the proposed full development of the parcel: partial development on the flat portion of the parcel and no development on Parcel 4. Table 1 shows a comparison of the characteristics for the proposed project and the two alternatives.

TABLE 1

Comparison of Proposed Project and Project Alternatives

Alternatives	Total Acres	Number of Condo Units	Number of Rental Units	Maximum Commercial Area (Sq. Ft.)	Number of Parking Spaces	Project Cost (1978 $)	Undeveloped Land on Parcel 4 (Acres)	Estimated Number of Occupants	Recreation Facilities Area (Sq. Ft.)
Proposed Project (Full development on Parcel 4)	10	553	101	68,000	721	$40.7M	0	1,300	28,000
Project Alternative Partial development on Parcel 4	8.1	480	101	68,000	648	$33.0M	1.9	1,140	28,000
Project Alternative No development on Parcel 4	6.4	353	101	68,000	521	$26.7M	3.6	870	28,000

B. IMPACTS

Preliminary calculations indicate that the number of units proposed would exceed the maximum allowed in the PUD. Therefore, either the number of units in the project must be lowered and redistributed or the project sponsor must apply for a zoning change to allow the greater density.

The project would preclude the possible use of the site as open space park land, physically linking the western portion of Golden Gate Park to Sutro Heights Park, a portion of the GGNRA.

Views toward the ocean from the rear of existing residences adjacent to Parcel 1 would be obstructed. Residences and apartments on higher terrain east of Parcel 4 would take in views of project area rooftops. Structures would be constructed on the lower slopes of Parcel 4 obstructing views looking north from the Great Highway toward the steep terrain that defines Sutro Heights Park.

The major hydrological impact of the proposed project would be an increase in the quantity of surface runoff during storms and a worsening of the quality of this water. It is probable that the surface runoff from the site would be discharged directly into the combined sewer storm drain system. The extent of this impact would depend on the nature of the eventual development of the city's Westside Wastewater Management Plan.

Construction of the proposed project on Parcel 4 would eliminate some vegetation in scattered locations on the dune bluff face. The direct loss of the dune tansy is contrary to the City of San Francisco's Environmental Protection Element Policy Number 3 (Policy for Flora and Fauna), which states: "Protect rare and endangered species." The proposed project would also increase the amount of human activity in the project area. Increases in the use of trail system through the dune meadow would accelerate the amount of trampling in this area and could be detrimental to the dune tansy population and other plants.

During project operation, traffic volume on 48th Avenue between Balboa and Cabrillo Streets is predicted to increase from 140 vehicles per day to 1,400 vehicles per day in a worst-case situation. The peak hour traffic on 48th Avenue between Balboa and Cabrillo would be increased from about 15 vehicles to 155 vehicles. The estimated level of service on 48th Avenue at Fulton Street would change from A to C.

The noise generated by equipment used to construct the project would temporarily cause an increase in ambient noise levels adjacent to the project site. Additional traffic during operation of the project would generate a 7 dBA increase in the traffic noise levels along 48th Avenue between Balboa and Cabrillo Streets.

C. MITIGATION MEASURES

Mitigation measures incorporated in the project include recreational facilities available to the public and public open space.

Street trees and trees to be installed in raised planters are being planned for the project. Visual impacts to present residents would be mitigated by tree planting in a 10-foot-wide buffer strip between Parcel 1 and adjacent residences to the east.

To establish area lighting that provides the maximum of safety and the minimum interference with nighttime views from higher elevations around the project area, a specialist in lighting design would be consulted to determine the location and intensity of the lights and prescribe the type of light to be used.

The project sponsor would follow recommendations of soils experts to prevent slope failure during excavation on Parcel 4. Some measures would be necessary to stabilize the bluff face on Parcel 4 after construction, including hydromulching and revegetation with native, sand-stabilizing plants.

As development at the project site would increase human activity through the dune meadow, some measures would need to be taken to protect the dune tansy population. The National Park Service has suggested three possibilities:

1. Increase public awareness of the problem through the use of signs and an education program.
2. Designate specific trails to limit disturbance.
3. Limit use of the area by designating it as a natural area.

These measures would need to be undertaken by the National Park Service and the project sponsor has indicated his willingness to discuss the coordination of these measures with the proposed project.

The project sponsor is prepared to promote both van-pooling and car-pooling and to act as an intermediary in an evaluation of the effectiveness of a RIDES program. The developer would apply to the Department of Public Works for a four-way stop at the Balboa/48th Avenue intersection to replace the current two-way stop.

In order to mitigate the impact of westerly and north-westerly winds on the site, tree plantings are proposed along adjacent streets and in pedestrian areas on the project site.

The project sponsor would include a clause in the construction contract requiring the contractor to use construction equipment which meets the noise emission limits in the San Francisco Noise Ordinance. An acoustical report would be prepared recommending measures to reduce the interior noise level of project residences to 45 dB.

The project would incorporate architectural features to minimize the bus noise impact on the adjacent community from the bus turnaround. These measures would include:

- sound-absorbing material installed on the underside of the bus turnaround roof
- a solid noise barrier erected along the east side of the bus turnaround
- commercial truck deliveries and pickups for the project site restricted to the hours of 7 a.m. to 5 p.m.
- mechanical equipment design for the project reviewed by an acoustical engineer to insure that the San Fran-cisco Noise Ordinance limits are satisfied at the property line.

Energy conservation measures included in the project design include double-glazed windows for thermal insulation, wall and ceiling insulation as required by state standards, and use of trees as windbreaks to reduce thermal loss.

D. ALTERNATIVES

In addition to the alternatives of partial development and no development on Parcel 4, the following alternatives are addressed in the EIR:

- No project
- No closure of La Playa Street
- No MUNI land exchange
- Other site uses -- residential, commercial, open space, and mixed use in conformance with existing zoning.

CHAPTER II
PROJECT DESCRIPTION

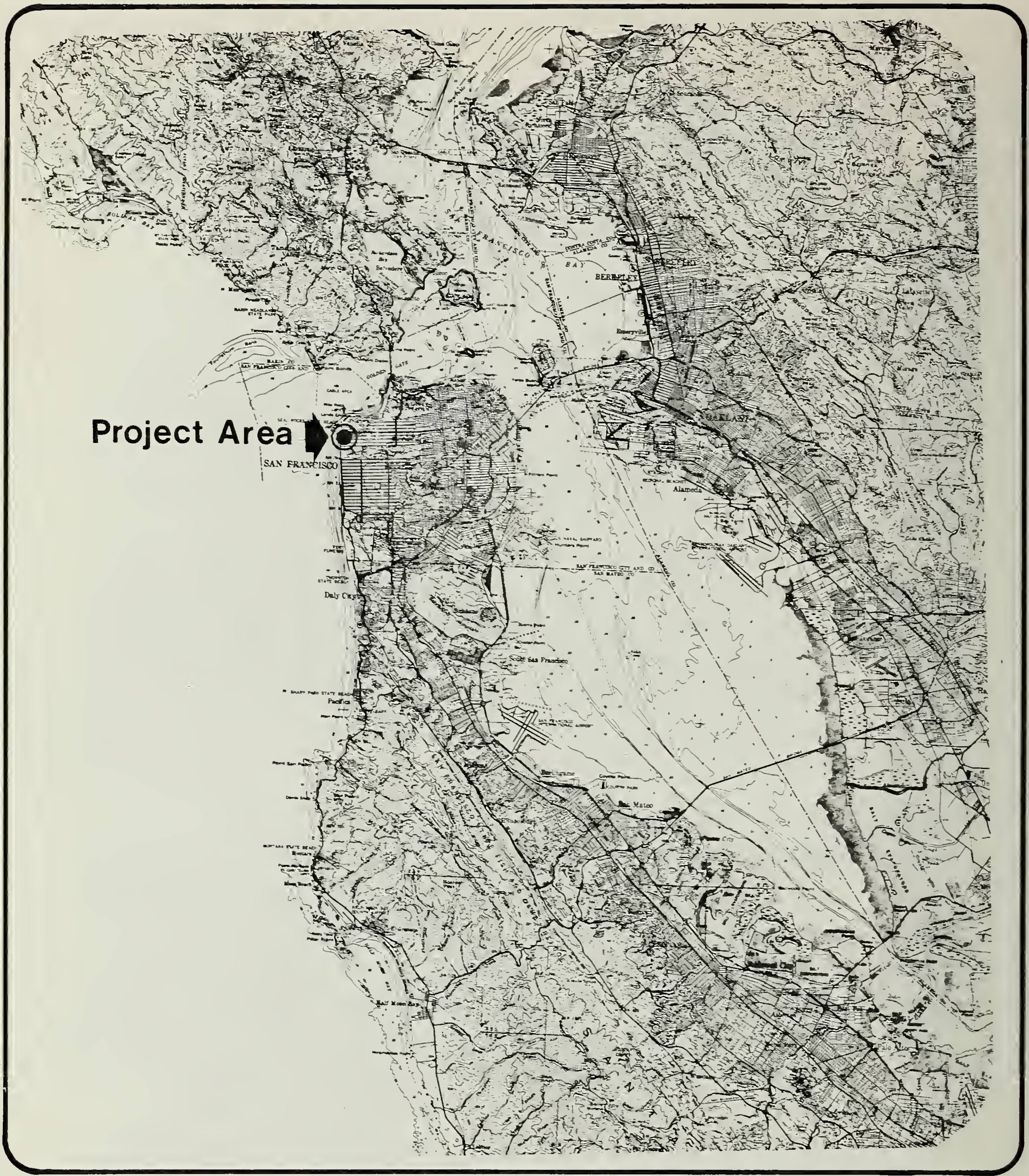
A. SPONSOR AND OBJECTIVES

Ocean Beach Associates (OBA), a limited partnership, has submitted a Conditional Use application to the San Francisco Department of City Planning for a Planned Unit Development on the site formerly occupied by the Playland-at-the-Beach amusement park.

The development, tentatively named "Ocean Beach Park Estates," would include condominium units, subsidized senior citizen rental units, and related commercial retail, recreation, and parking facilities. The objective of OBA is to develop residential housing on the site in an integrated, unified design. The project is being designed by the architectural firm of Sandy and Babcock.

B. LOCATION OF PROPOSED PROJECT

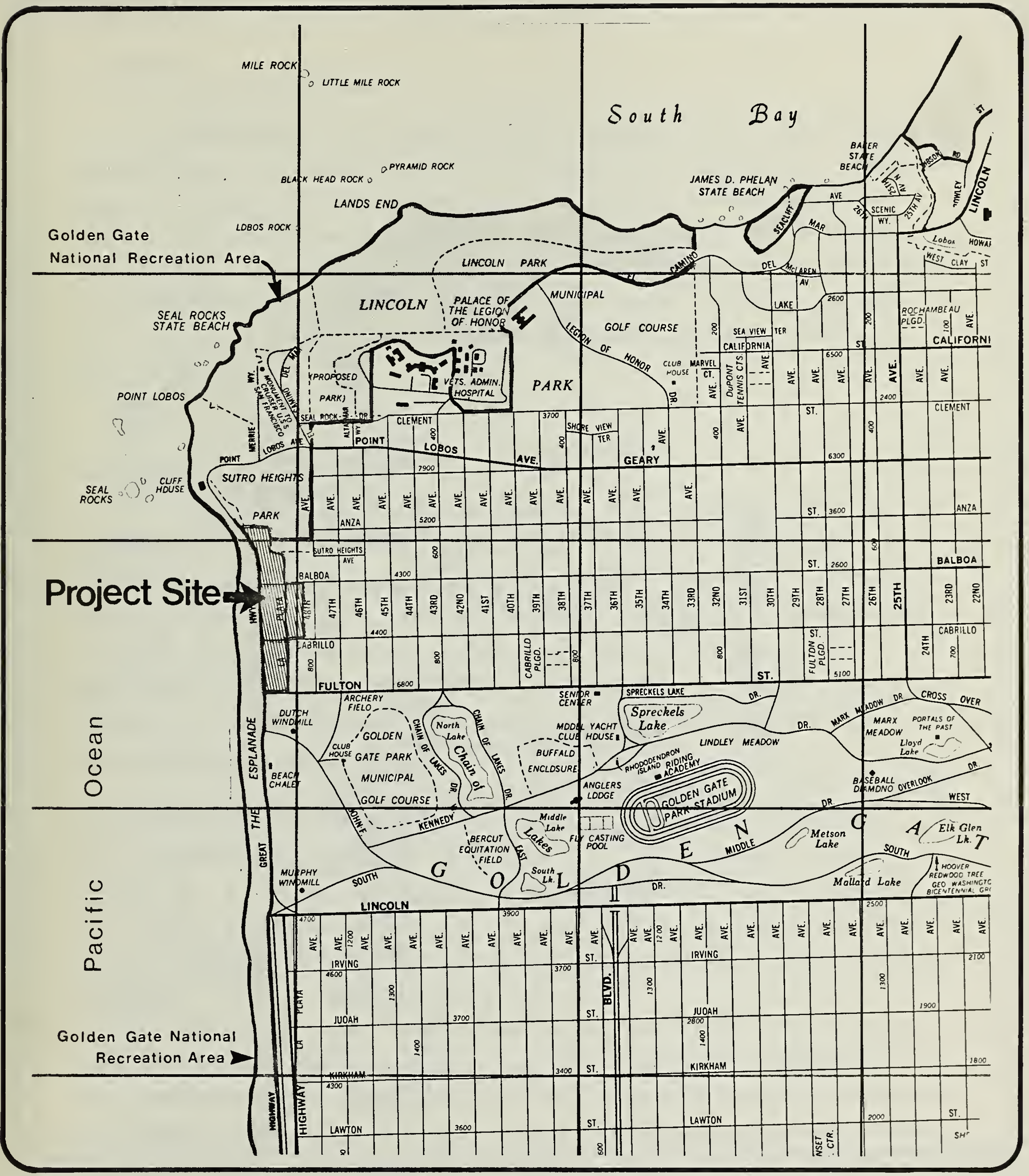
The location of the proposed development is the three and one-half block area formerly occupied by the Playland-at-the Beach amusement park (Figures 1 and 2, pages 8 and 9). The site is generally bounded on the west by the Great Highway and the Ocean Beach area of the Golden Gate National Recreation Area (GGNRA), on the north by Sutro Heights Park (GGNRA), on the south by Fulton Street and Golden Gate Park (City owned), and on the east by La Playa, including the east side of La Playa between Cabrillo and Balboa Streets. The four parcels proposed for development are shown in Figure 3, page 10.



Regional Location Map

Source: U.S. Geological Survey

Figure No.1



Site Location Map

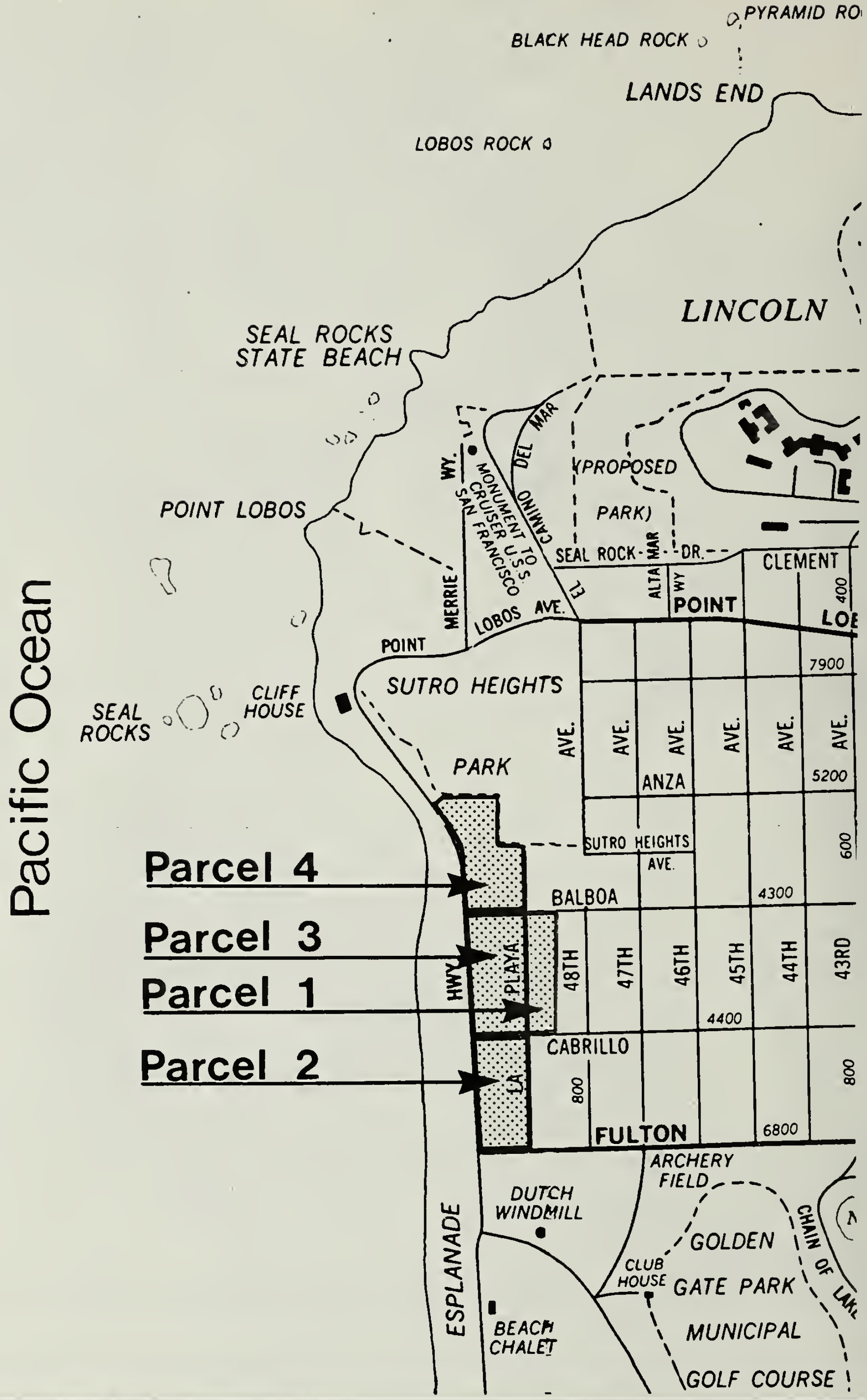
North

0 1000 2000 3000

Scale Feet

"Basic map reproduced by permission of the California State Automobile Association, copyright owner."

Figure No.2



Project Parcels

North

0 250 500 1000

Scale Feet

Figure No. 3

The site is at the edge of a middle-class residential neighborhood of mainly two- or three-story structures. Single-family residences and apartments occupy the avenues, while small commercial establishments are found along the streets. Immediately adjacent to Parcel 1 are the backyards of residences fronting on 48th Avenue. The Safeway store across La Playa from Parcel 2 is the only other structure adjacent to the property.

C. PROJECT CHARACTERISTICS

The Planned Unit Development (PUD) proposal for the approximately 10 acres of land would involve development of a maximum of 553 owner-occupied, middle-income residential units on Parcels 2, 3, and 4. Parcel 1 would have commercial and recreational facilities, as well as 101 rental units for senior citizens and a MUNI bus terminal. Parcels 2 and 3 would have commercial facilities on the corners at the Great Highway and Cabrillo Streets.

A 56 x 60-foot lot on Parcel 3 facing the Great Highway is presently owned by the Olympic Club. The San Francisco Municipal Railway (MUNI) owns land at the northeast corner of Parcel 3, which is used as a turnaround for the 5 Fulton trolley bus. Development of the project as proposed assumes acquisition of the Olympic Club lot and assumes a land exchange with MUNI for the present turnaround.

Present zoning would not allow the number of dwelling units proposed for the RH-2 (two-family dwelling) areas of the site. Therefore, either the configuration must be changed to place more dwelling units in the areas of less restrictive zoning or the total number of units must be reduced or the zoning of some portions of the site must be changed. Without one of these modifications, the project could not be approved as proposed.

Figure 4, page 13, shows the proposed site plan for the PUD. All buildings shown would be within the 40-foot height limitation of the Planning Code and, generally, would be four stories above grade. A total of 721 below-grade parking spaces would be distributed among the four parcels (Figure 5, page 16). The applicant proposes to close La Playa Street to vehicular traffic (except transit, emergency, and service vehicles) between Balboa and Cabrillo Streets. Pedestrian access from the beach to the commercial area on Parcel 1 would be through a park-like area between Parcels 2 and 3. This area, which is now a diesel-bus turnaround, would be paved and landscaped, and would include about 1,000 sq. ft. of primarily beach-oriented commercial shops housed in kiosks.[1] This area would be designed to create an inviting access to the commercial area on Parcel 1 from the Great Highway and the beach.

The owner-occupied middle-income units on Parcels 2, 3, and 4 would include junior one-bedroom to two-bedroom/den units and would range approximately from 650 sq. ft. to 1,350 sq. ft. Less than 25% of the units would be one bedroom; the remainder would be one bedroom/den, two-bedroom and two-bedroom/den units. The different unit sizes would permit a variety of occupants, ranging from single adults to married couples with children.

The four parcels would be developed as follows:

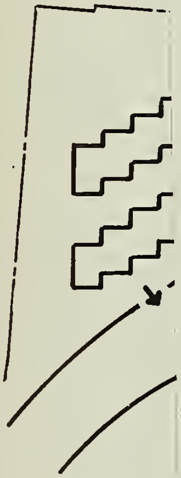
Parcel 1: Approximately 60,000 gross sq. ft. of commercial space; 7,500 gross sq. ft. of enclosed recreation area, including a swimming pool; 101 rental units for senior citizens; 133 parking spaces below grade; 20,500 sq. ft. of open-air, rooftop recreational facilities

---

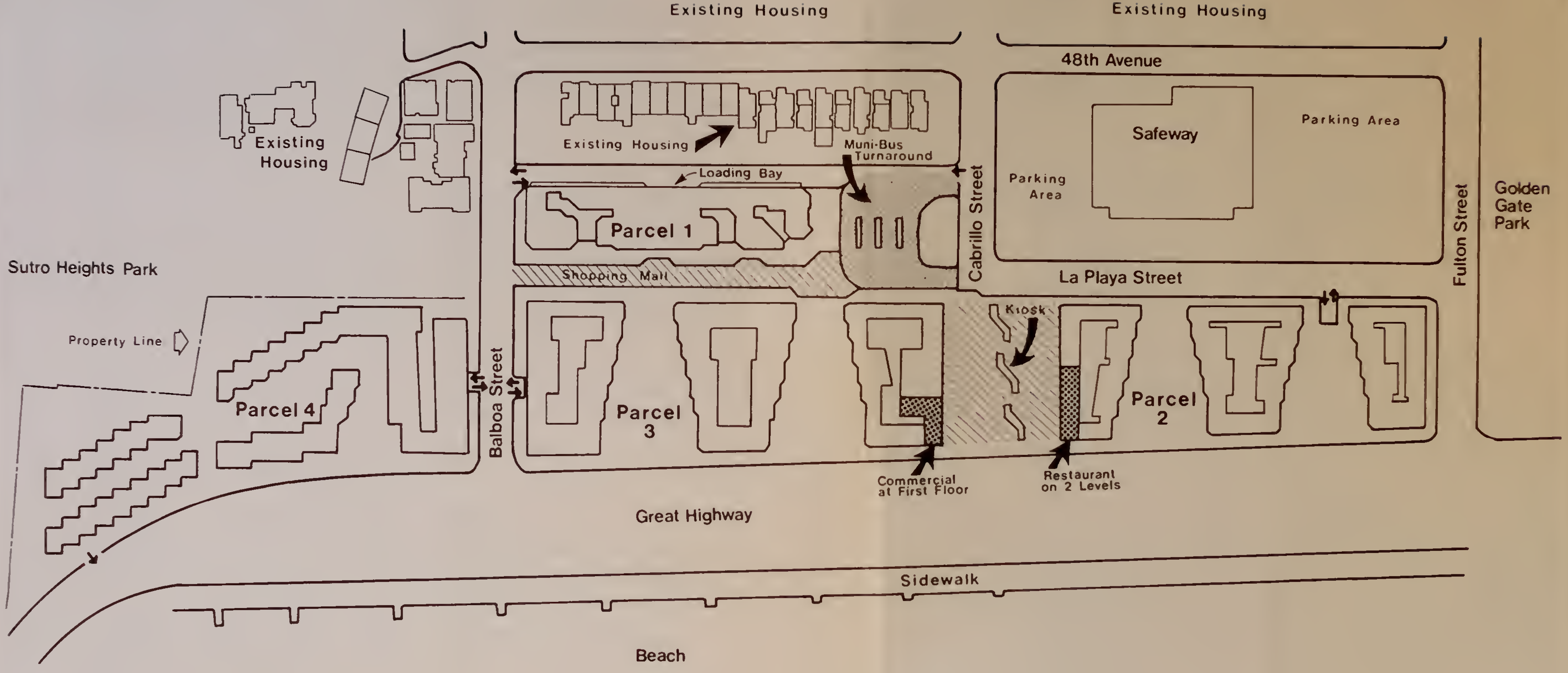
[1] Small open structures.

Sutro Heigh

Prop



Site P



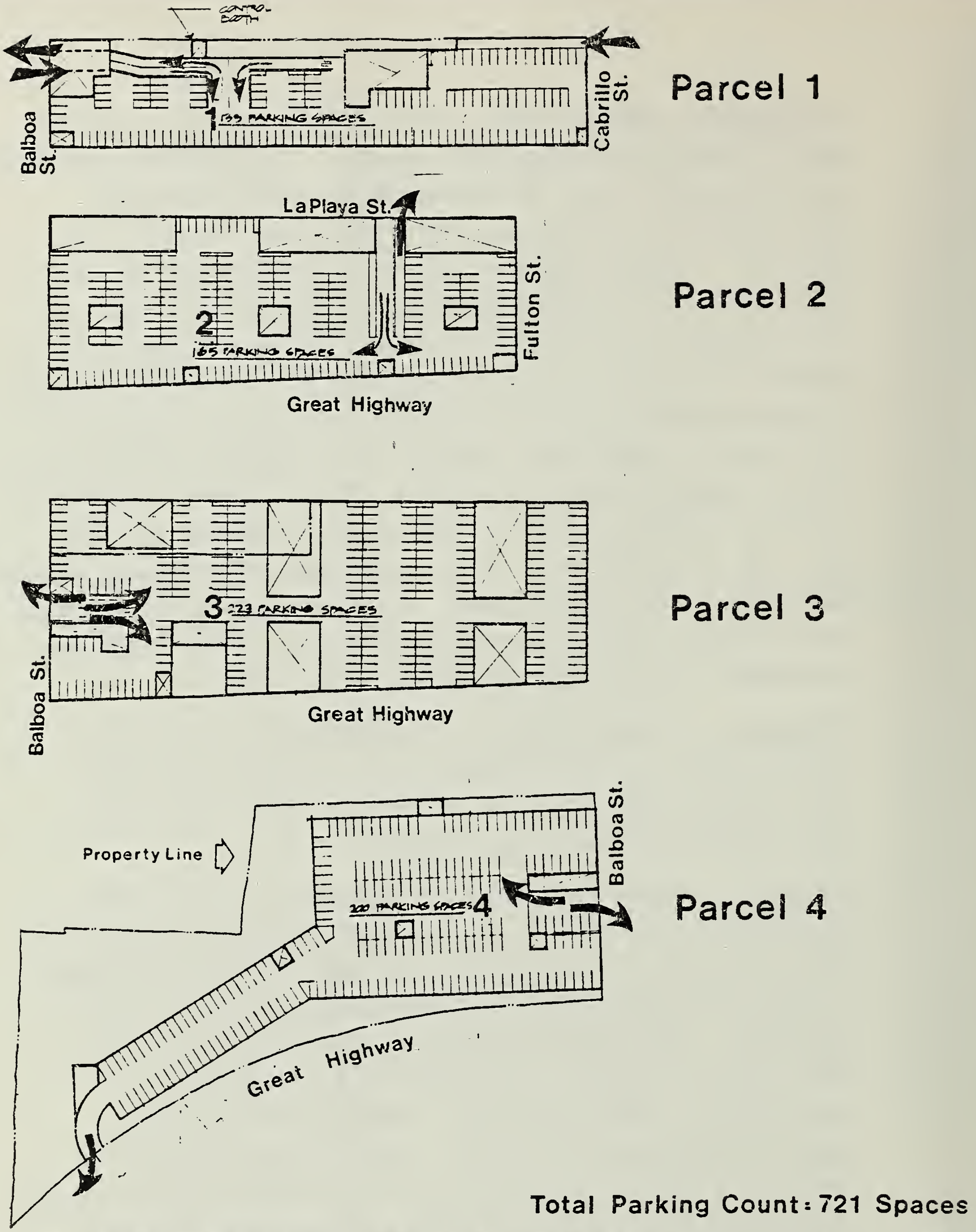
Site Plan

Figure No. 4

including a tennis court, two platform tennis courts and an enclosed racquetball court. The southern portions of the parcel would be occupied by a MUNI terminal for diesel and electric buses from MUNI routes 5, 18, and 38. A noise barrier would be constructed on the east side of the MUNI terminal to shield the rear of the houses facing on 48th Avenue. Figure 6, page 17, shows the second, third and fourth floor building plans. Cross-sections for the building on Parcel 1 are shown in Figure 7, page 18. Rental units would be one-bedroom units, approximately 770 gross sq. ft. each. Communal laundry facilities and social space would be provided for use of residents. The commercial space would primarily serve the convenience needs of local residents. Membership in the recreation club would be open to district residents as well as residents of the PUD.

Parcel 2: Approximately 150 condominium units and 6,000 gross sq. ft. of restaurant area at the corner of Cabrillo and the Great Highway. There would be 165 parking spaces below grade.

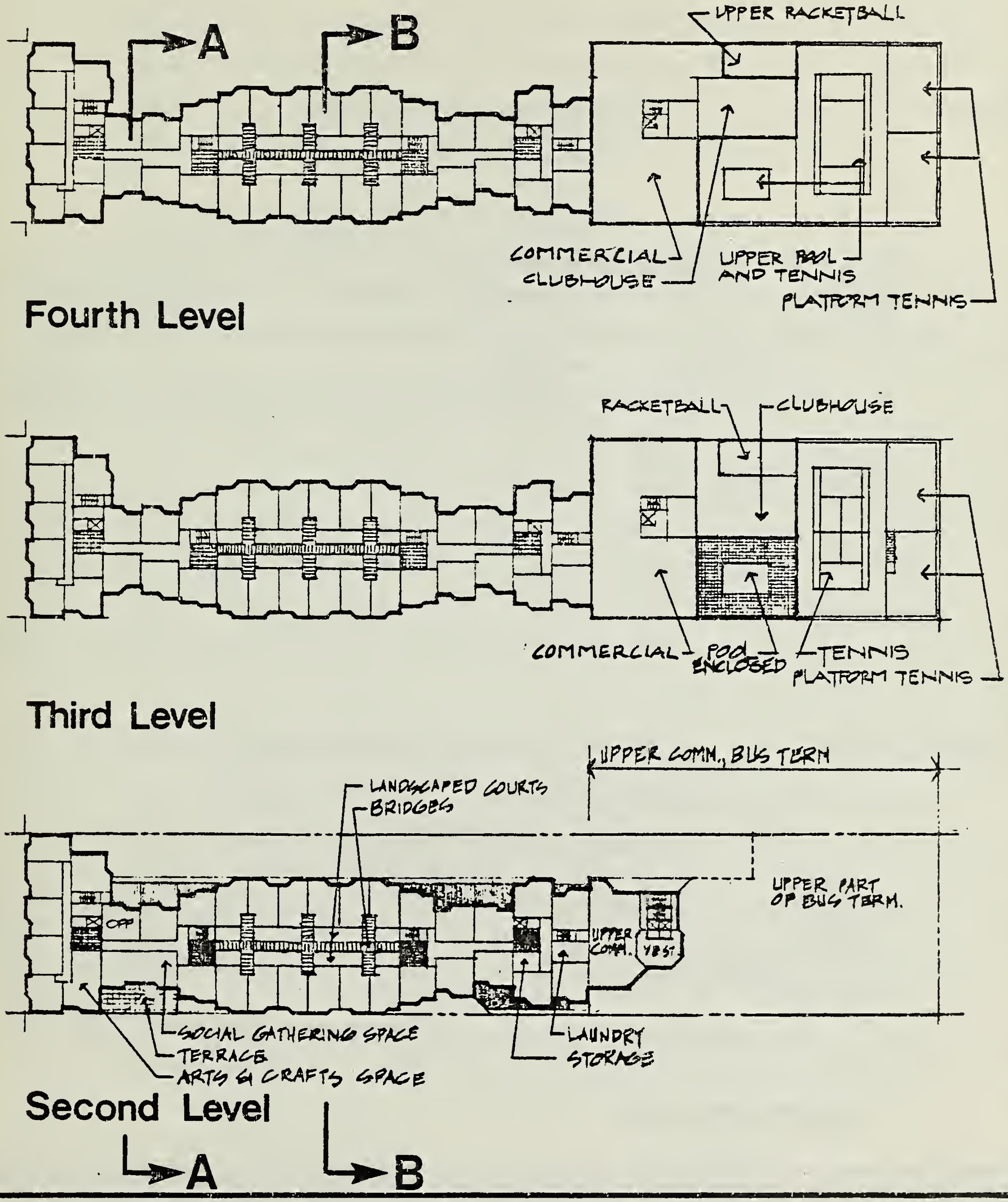
Parcel 3: Approximately 203 condominium units and 2,000 gross sq. ft. of beach-oriented retail commercial space at the corner of Cabrillo and the Great Highway. A lot at the northeast corner of the parcel is owned by MUNI. The project sponsor proposes to exchange this lot for land at the south end of Parcel 1, to be used as a MUNI terminal. Below-grade parking would accommodate 233 cars. The parking garage for Parcels 2 and 3 would be four feet above sidewalk level fronting on the Great Highway and would be entirely below grade fronting on La Playa.



Parking Plan

North

Figure No.5


Fourth Level

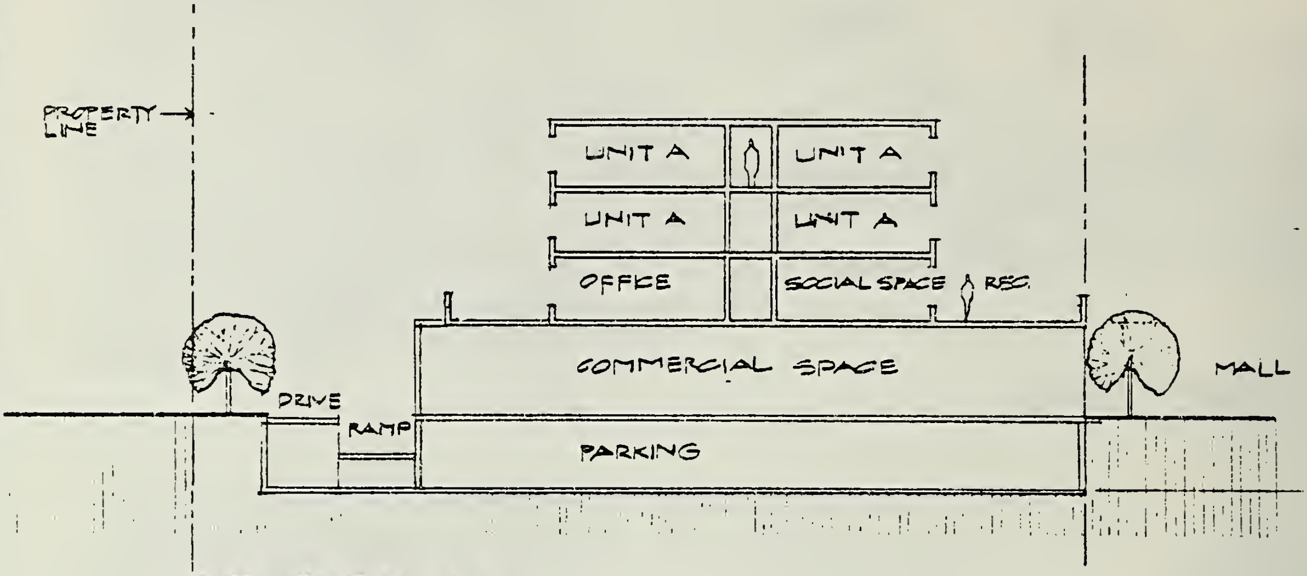
Third Level

Second Level

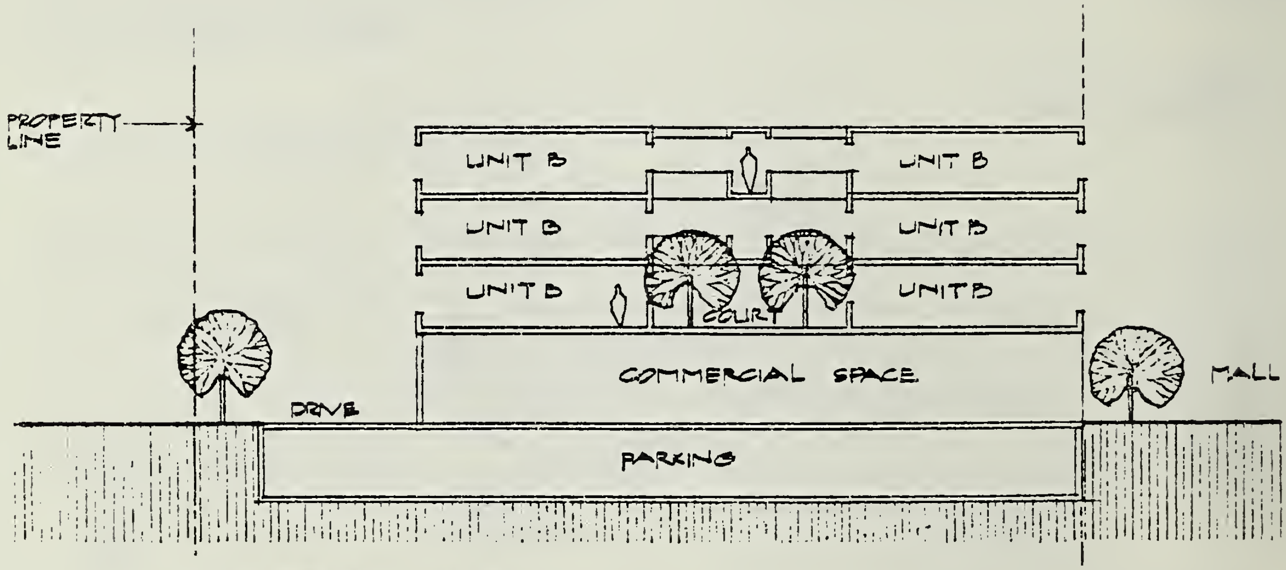
Parcel 1 Building Plans
(See Figure 7 for cross sections AA and BB)

0 30 60 120
Scale Feet

Figure No.6



SECTION AA



SECTION BB

Parcel 1 Cross-Sections, Looking South
(See Figure 6 for location of cross sections)

0 10 20 40
Scale Feet

Figure No.7

Parcel 4: Approximately 200 condominium units. Parking spaces below grade would accommodate 200 cars. Figure 8, page 19, is a conceptual rendering of the building configuration viewed from the Great Highway.

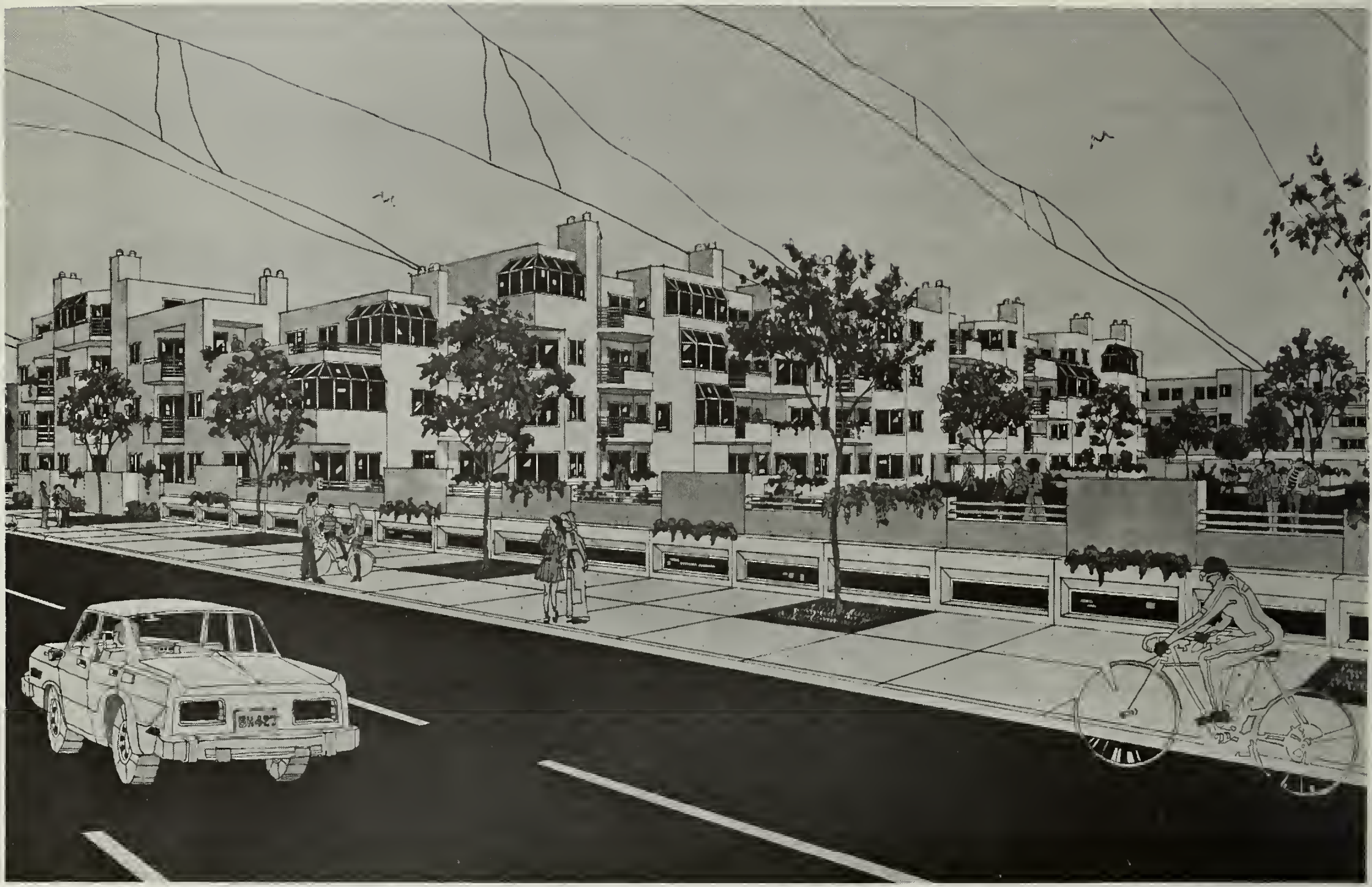
Figure 8, page 20, is a conceptual rendering showing buildings and the interior courtyards between them on Parcel 3. The courtyard would provide private open space for the use of project residents, access to the general public being restricted by a five-foot high wall on La Playa, and the raised garage and a railing along the Great Highway.

The recent incorporation of 1.9 acres of Parcel 4 (Omnibus Parks Bill, S. 791) into the Golden Gate National Recreation Area may influence development of Parcel 4, reducing the number of units. The alternative of no development on Parcel 4 is also addressed in this report. See Chapter VII, page 153, for discussion of these alternatives.

D. PROPOSED SCHEDULING AND COST

The project would be constructed in increments, over a four-year period. Improvements on Parcel 2 would be constructed during the first year after EIR certification and PUD approval; improvements on Parcel 1 would be constructed one year later, or when rent subsidies become available; and improvements on the remaining parcels would be constructed in the third and fourth years.

Total project costs for construction and other direct expenses, excluding land, are estimated to be approximately $40.7 million (1978 dollars).



View northeast toward project from Great Highway

SOURCE: Sandy-Babcock, Architects

Figure No. 8

E. PROJECT HISTORY

The site formerly was occupied by the Playland-at-the-Beach amusement park.[1] Playland was built in 1923 by George K. Whitney on a portion of the old Hotaling estate adjoining Ocean Beach. At that time, amusement parks in coastal cities were a major form of family-oriented recreation.

The park offered a range of entertainment, including rides, concession booths, ballroom dancing, and an outdoor bandstand. At its peak, the park attracted as many as 60,000 people each weekend.

In the 1960's the number of visitors to Playland steadily declined. Several rides and concessions, including the roller coaster and wheel of fortune, were closed down due to violations of City health, safety, and gambling ordinances. As a result, the park's revenues were cut in half. On 14 May 1967, an incident at a ticket window developed into a riot, and shortly thereafter, Playland was shut down. In August 1968, Playland was sold to developers Robert Frazer and Charles Knapp, who wanted to build high-rise apartments on half of the property and leave Playland on the other half. Their plans were never realized and they were foreclosed upon in 1970.

In 1972, Jeremy Ets-Hokin's Seal Rock Development Company submitted an application to the City for condominium development on the site. After receiving an initial application for 900 dwelling units on the site, the San Francisco Planning Commission in June 1972, approved conditional use CU72.24 for 762 units and three floors of commercial space. Following a determination that an EIR was required for this project, the Commission certified an EIR on the project dwelling units and 178,000 sq. ft. of commercial area in December 1972 (Resolution No. 6931). In June 1973, final approval was received from the Coastal Commission for 660 dwelling units and 151,000 sq. ft. of commercial facilities. This development was never pursued because of financial difficulties. The land presently is owned by Independence Mortgage Trust, through foreclosure proceedings in February 1977.

---

[1] Information on Playland-at-the-Beach was supplied by Don Herron, Playland Research Center, San Francisco, California and by Niels Erch, Committee to Save Ocean Beach.

A number of recent propoals have been considered for the site. In 1975, under the Planning Operations and Marketing Study, authorized by the Urban Mass Transit Authority, 20 sites were investigated for a MUNI storage and maintenance facility to replace the Kirkland Motor Coach Division. The Playland site was one of five sites selected for further study. In April 1978, the Public Utilities Commission dropped consideration of this site as a MUNI storage and maintenance facility.[1]

In early 1978, the Asian Arts Museum was considered for relocation from Golden Gate Park to the level portion of the Playland site. The Asian Arts Museum is in the same building complex as the M.H. de Young Museum. Both the de Young and Asian Arts Museums are overcrowded and need additional facilities. Relocations of the Asian Arts Museum would have allowed the de Young to expand into the Asian Arts building, thereby avoiding additional construction in Golden Gate Park. The proposal to relocate the Asian Arts Museum to the Playland site was tabled indefinitely in April 1978 by the Urban and Consumer Affairs Committee of the San Francisco Board of Supervisors.

On 10 November 1978 President Carter signed the Omnibus Parks Bill (S. 791), which authorizes acquisition of 1.9 acres of Parcel 4 for the GGNRA. This legislation may influence the development of Parcel 4 (see Section VII, page 153).

---

[1] San Francisco Public Utilities Commission resolution 78-0160, 11 April 1978.

F. APPROVALS REQUIRED

1. Planning Code

On 18 May 1978, Ocean Beach Associates filed Conditional Use application CU78.32 with the Department of City Planning to develop the site as a Planned Unit Development (PUD). The application was amended on 7 September and 17 October 1978, rearranging the site plan. On 29 March 1979, as a result of discussions with Coastal Commission staff, the application was again amended to show the restaurant and some commercial space at the corner of Cabrillo and the Great Highway.

Pursuant to sections 303 and 304 of the San Francisco Planning Code, a development must meet certain criteria before a Conditional Use PUD permit may be granted. These criteria include requirements that the development be compatible with the neighborhood and not detrimental to the health, safety and welfare of people living or working in the area or injurious to property in the vicinity. Specific criteria for Planned Unit Developments include the following: that the parcel include an area of at least one-half acre; that the property be either under common ownership or the subject of a single application by all owners; that the project affirmatively promote objectives and policies of the City's Comprehensive Plan; that the project provide adequate off-street parking and open space usable by project occupants and, where appropriate, by the public; that the density allowed not be equivalent to a zoning reclassification; that only neighborhood-oriented commercial uses be allowed in residentially zoned districts; and that no exemptions from height limits be authorized other than those allowed in the Planning Code.

The conditional use application would be the subject of a public hearing before the City Planning Commission, after certification of the Final EIR. The hearing would probably be scheduled at the same time as applications for subdivision and the street encroachment (see below). If appealed, the conditional use application would be heard by the Board of Supervisors, also at a public hearing.

2. Subdivision Approval

Prior to the sale of the condominium units, it would be necessary for the project sponsor to obtain approval of an application to subdivide the property pursuant to Section 1303(c) of the Subdivision Code, Chapter XIII of Part 2 of the San Francisco Municipal Code. Such an application must be filed with the Department of Public Works, which refers it to the Department of City Planning, the Bureau of Engineering, the Bureau of Building Inspection and the Human Rights Commission. In the Case of the City Planning Commission, a public hearing to consider consistency with the Master Plan is necessary (Section 1332 of the Subdivision Code). This application would be considered at the same time as the Conditional Use application. Subdivisions of 50 units or more require provision of a minimum of 10% low and moderate income housing, provided that the City Planning Commission finds that public subsidies are available (Section 1341 of San Francisco Subdivision Code).

3. Authorization To Use La Playa Street Between Balboa and Cabrillo Streets, and Cabrillo Street Between La Playa and The Great Highway

The proposed development of portions of La Playa and Cabrillo Streets would require authorization of a major revocable encroachment permit. Permit application would be made to the Department of Public Works. The matter would then be considered by ISCOTT,[1] which would address proposed use of the street, emergency access, design criteria, and landscaping proposals. The application would also be referred to the Department of City Planning for consideration of conformity with the Master Plan.[2] The Department of Public Works would then hold a public hearing and make a recommendation to the Board of Supervisors for final approval or disapproval. Minor encroachment permits for the kiosks, and other structures which may be erected on the street space, but separate from the street encroachment permit, would also be required. These latter permits are dealt with as procedural matters within the Department of Public Works and would not require a decision by the Board of Supervisors.

4. Authorization to Exchange Portion of Parcel 1 for Portion of Parcel 3 and to Reroute the Terminal Loop

It is proposed to consolidate the existing MUNI facilities at the north end of Parcel 3 on Balboa Street and at the western end of Cabrillo Street into one terminal and turnaround facility, to be located in the southern portion of Parcel 1. Also proposed is the use of air space above the new facility for game courts and use of subsurface area for parking. All of these matters, including the use of an air space on MUNI land, would be the subject of staff reports to the Public Utilities Commission (PUC) which would make a recommendation to the Board of Supervisors. Prior to PUC consideration, the Department of Public Works and MUNI's Real Estate section would consider the matter; the former for likely impact of traffic, rights-of-way and design considerations; the latter for land value and easement considerations. PUC may also hold a public hearing on the subject.[1] Authorization to abandon the existing route for the 38 bus and to create the proposed loop would also be necessary. An abandonment of a route requires authorization by the Board of Supervisors and would be considered at the same time as the proposed change in location and use of the turnaround facility. The creation of routes 5 and 18 passing through the turnaround would require action by the PUC but not by the Board of Supervisors.[2]

---

[1] Interagency Staff Committee on Transit and Transportation, made up of representatives of City Planning, MUNI, Traffic, Police, Fire and other affected departments.

[2] This matter would be considered at the same time as other applications requiring City Planning approval.

5. Coastal Commission Permit

The proposed project site is subject to the provisions of the California Coastal Act of 1976. It would therefore be necessary for the project sponsor to obtain approval for the development from the Coastal Commission. The North Central Coast Regional Commission would consider the project at a public hearing subsequent to consideration by the various City Agencies described above. The permit could include conditions which would have to be met. A denial or approval could be appealed to the California State Coastal Commission for final decision.

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[1] It is the PUC's normal practice to invite public comment on considerations of this type. Lynn Pio, Transit Environmental Coordinator, MUNI, telephone conversation, 20 July 1978.

[2] Barbara Brown, MUNI Planning Department, telephone conversation, 27 April 1979.

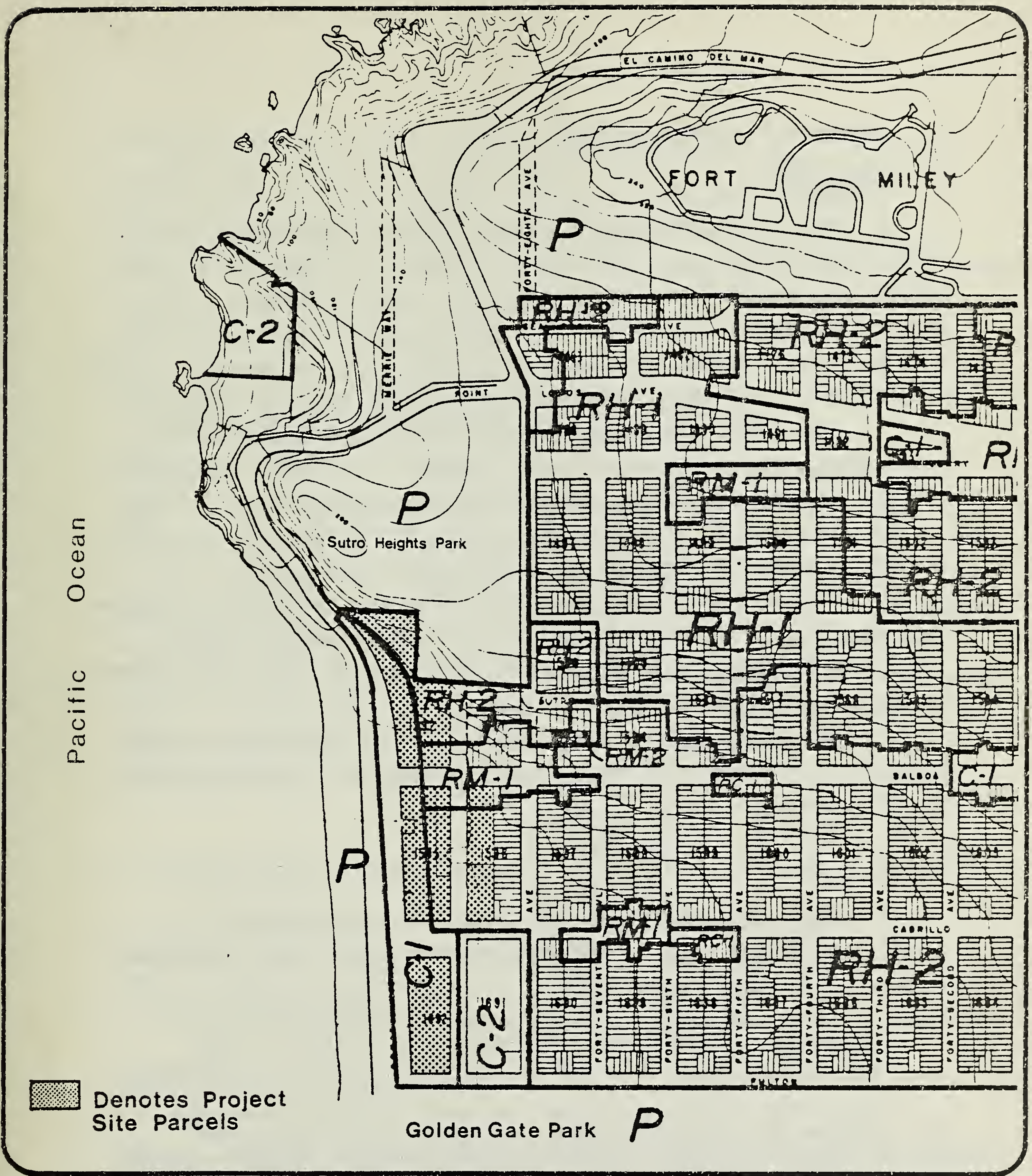
CHAPTER III
ENVIRONMENTAL SETTING

A. LAND USE

The proposed site is in the westernmost part of the Richmond District, a predominantly middle-class neighborhood containing single-family residences, interspersed with low- to middle-density apartment buildings. The Richmond District also has a number of neighborhood-oriented businesses, such as food and vegetable markets, beauty salons, drycleaners, and tailors. Some of these are nonconforming uses.

The site is vacant, except for remains of foundations of the Playland-at-the-Beach amusement park. It is bordered on three sides by public open space: Sutro Heights Park to the north, the Great Highway and Ocean Beach to the west, and Golden Gate Park to the south. On the east side, north of Cabrillo, there are single-family homes and apartments. South of Cabrillo, there is a Safeway supermarket and its parking lot. Commercial uses also are located northwest of the site at the Cliff house.

The site is zoned RM-1 (Residential Mixed Low Density) district, RH-2 (Residential, Two Family) district and C-1 (Neighborhood Shopping) district (see Figure 9, page 29). Parcels adjacent to the site are also zoned RM-1 and RH-2; the Safeway site is zoned C-2 (Community Business) district.



Zoning

North

0 250 500 1000
Scale Feet

Source: Zoning Map of the City and County of San Francisco, 1978

Figure No. 9

B. COMMUNITY CHARACTERISTICS

1. Demography

The proposed project site is in the westernmost part of Richmond District, Census Tract (CT) 479. The Census Tract boundaries are Golden Gate Park to the south, Lincoln Park and Ft. Miley to the north, 38th Avenue to the east, and the Pacific Ocean on the west. In 1970, the area population totaled 8,500, of which 6,600 (77%) were white middle-class residents.[1]

The community surrounding the proposed project has less ethnic diversification than the City as a whole according to 1970 Census data. The population is slightly older, less mobile, and better educated; a greater percentage of the residents are married compared to total City statistics.

In 1970, the mean income of the area was slightly higher than the City average ($13,000 compared to $12,500), and a lower percentage of the population had incomes below the poverty level (6% vs. 10%).

Over half of the area population is employed, in comparison to 45% citywide employment, primarily in white-collar occupations.

2. Housing

The proposed project is on the western border of a primarily single-family residential community. In 1970 Census counts there were about 3,600 units in CT 479, of which 2,000 were one-unit structures. Approximately 370 buildings in the area had ten or more units. At the time of the census, housing was in good condition and less than 1% lacked some plumbing facilities, compared to the city wide average of 8%. Richmond District housing was largely built in the first half of the century; nearly 60% of the total units were constructed prior to World War II. According to the 1970 housing count, only 8% was built after 1960.

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[1] The 1970 Census provides the most current demographic information on the community, although it is eight years out of date. The City Planning Department has no more recent infor-mation. Observation of the area reveals that the basic demographic characteristics may not have changed, with the exception of a greater number of ethnic families moving to the community (primarily Asian), but this cannot be substantiated until the 1980 census.

Housing needs for San Francisco are documented in the Community Development Housing Assistance Plan,[1] which indicates a need for some type of housing assistance for 82,456 house-holds. Without public funds, it is unlikely that new housing developments can provide low-cost housing. A report prepared for the City by Gruen Gruen + Associates[2] in 1976 states that construction costs (at the time of the report) are high enough in San Francisco to preclude development of market housing that can be offered for rent or sale to moderate-income house-holds. The report concludes that the market is not likely to produce new housing for moderate-income families, including the elderly, regardless of what zoning policy is adopted by the City.[3]

C. RECREATION AND OPEN SPACE

The proposed project site is bordered on three sides by public open space: Sutro Heights Park to the north, the

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[1] Mayor's Office of Community Development, Community Development Program and Housing Assistance Plan for 1978, San Francisco, November 1977.

[2] Gruen Gruen + Associates, Analysis of the Economic Impacts of the Proposed Change in San Francisco Zoning, 17 December 1976

[3] Gruen Gruen + Associates, Analysis of the Economic Im-pacts of the Proposed Change in Zoning, page .

Great Highway and Ocean Beach to the west, and Golden Gate Park to the south. The Golden Gate National Recreation Area is unique because of its extensive coastal resources and ready availability to people in adjacent urban areas. Golden Gate Park offers cultural facilities, landscaped areas and pastoral retreats, as well as a place for active recreation, including polo, bicycling, jogging and field sports. It is estimated that recreation opportunities available in the GGNRA and Golden Gate Park are within a maximum two-hour drive from outlying areas of the nine-county Bay Area.[1]

1. Golden Gate National Recreation Area (GGNRA)

The GGNRA extends into Marin County, north of San Francisco. The San Francisco portion of the 34,000-acre GGNRA stretches from Fort Funston, adjacent to southern City limits at the coastline, continues north to the Golden Gate Bridge, and proceeds east along the shoreline of San Francisco Bay to the area of Fisherman's Wharf (see Figure 2, page 9 , for a portion of the GGNRA). Within one mile of the project site, the GGNRA contains:

a. San Francisco Headlands

The Headlands is comprised of rocky cliffs and undeveloped shoreline areas. Recreational activities in the Headlands relate primarily to the land's association with the sea. Trail systems provide opportunities for photography, hiking, picnicking, and watching vessels pass through the Golden Gate.

b. Cliff House

The Cliff House restaurant is situated on a rocky point that defines the western tip of the San Francisco portion of the GGNRA. It provides panoramic views of the Pacific Ocean, the Marin coastline to the north, and Ocean Beach to the south. Six-hundred feet offshore, Seal Rock serves as a resting place for sea lions. The Cliff House and adjacent structures are the main commercial development in the San Francisco portion of the GGNRA. Facilities include three restaurants, two bars, a fast-food service facility, and two gift shops. Immediately to the north are the ruins of the old Sutro Baths. The Cliff House area attracts over 1.5 million visitors a year.[1]

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[1] State of California, Department of Parks and Recreation; Map Recreation Travel Time Zones From San Francisco - Oakland and San Jose Metropolitan Complex, 1975-1980.

c. Sutro Heights Park

The former home of a San Francisco mayor, Sutro Heights Park is located east of the Cliff House, and adjoins the north property line of the proposed project site. The park has a combination of trees, shrubs, flowers, and open lawn area crossed by formal pathways accented with statuary. The park is isolated from the Cliff House area and project site by steep cliffs, and offers solitude and tree-framed views of the ocean (see Section III.D, Visual Quality, page 39).

d. Ocean Beach

The narrow, linear ocean frontage of Ocean Beach stretches from the Cliff House south to Fort Funston. The Great Highway defines the eastern boundary of the beach. The north end of Ocean Beach, to the west and opposite the project site, is flat and accessible to those visiting the Cliff House area or the western end of Golden Gate Park. The beach opposite the project site is defined by a sea wall with stairs for beach access and a 36-foot-wide sidewalk. This area is called "The Esplanade" and is the most heavily used area of Ocean Beach on warm, sunny days.

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[1] United States Department of the Interior; Golden Gate National Recreation Area, Point Reyes National Seashore, Assess-ment of Alternatives for the General Management Plan, May 1977, page 188.

2. Golden Gate Park

The northwest corner of Golden Gate Park is separated from Parcel 2 of the project site by Fulton Street (Figure 2, page 9). The Park is a block of land over one-half mile wide and about three and one-quarter miles long, extending east toward the interior of San Francisco. Because of its size and variety of recreational and cultural features, Golden Gate Park is the City's major interior public open space.

The western portion of Golden Gate Park is pastoral in quality. There is open space and enclosure provided by extensive plantings of trees, shrubs, and lawn areas. Vistas across the rolling landscape provide light and shadow, as well as color and texture that vary with the seasons. Lakes and watercourses are adjacent to equestrian and pedestrian trails and vehicle roadways.

The Park's eastern portions are urban in character, and incorporate cultural and recreational facilities, including the Strybing Arboretum, tennis courts, a music concourse, the de Young Museum, and the California Academy of Sciences. In a typical summer, close to three million people visit the Academy of Sciences, and an equal number visit the de Young Museum.[1]

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[1] Study Program: The Preservation and Protection of Golden Gate Park, 6 July 1976, page 3.

In addition, numerous private clubs and organizations maintain facilities within the Park, including model clubs, fishing and equestrian groups.

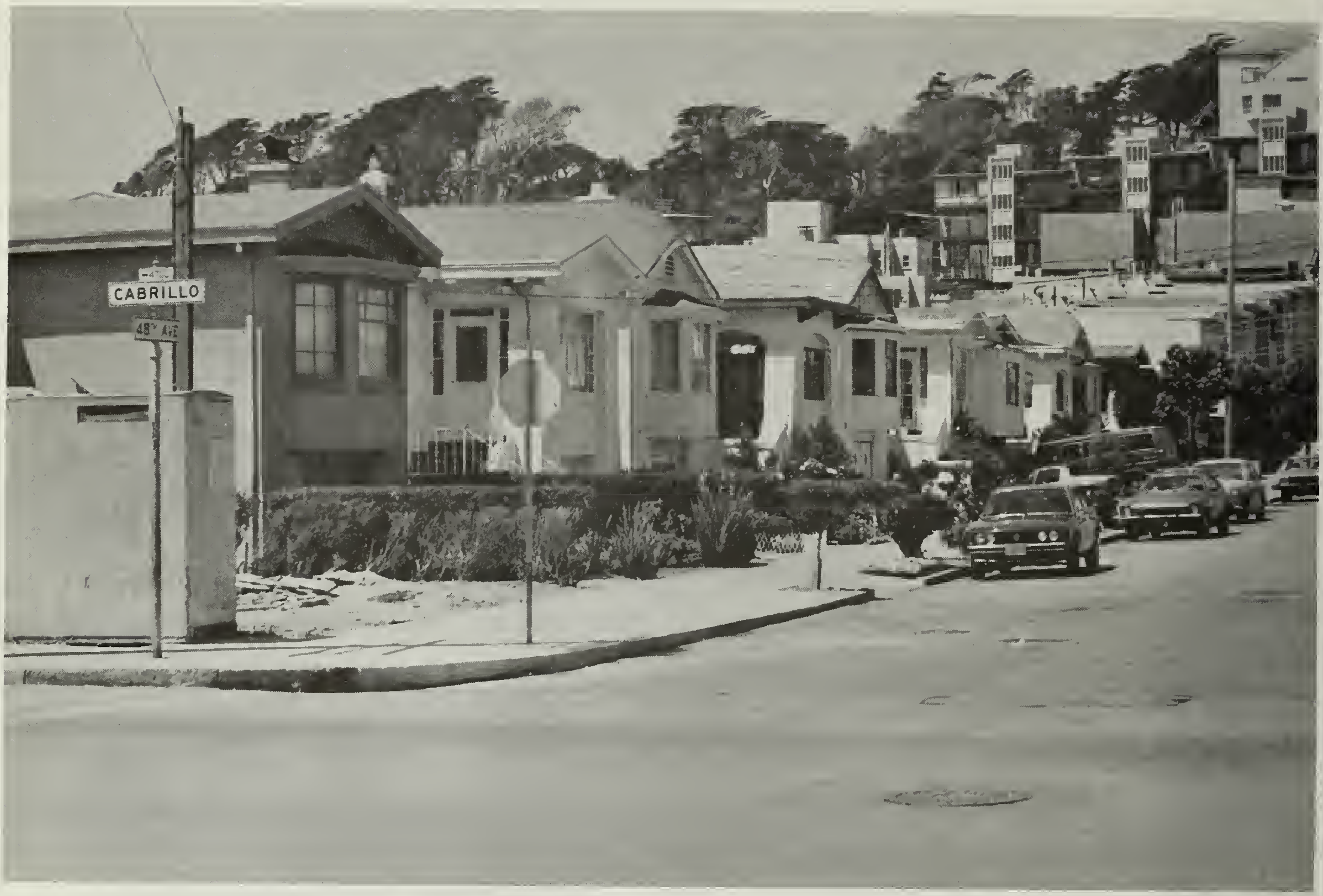
D. VISUAL QUALITY

1. General Area

The project site is an open undeveloped expanse of land, characterized by rubble, crumbling foundations, mounds of excavated earth, and scattered grass clumps. A chain-link fence surrounds major portions of the site, preventing public access.

In its present condition, the project site visually contrasts with the highly organized Richmond District residential area. The streets of the District are laid in a grid pattern with blocks of uniform size (Figure 2, page 9). The District consists mostly of rectangular, wood-frame, two-story single-family structures with flat roofs. There are several apartment buildings extending to six stories. Sideyards do not exist, except in isolated locations, and building setbacks from roadways are uniform. Small commercial establishments are located within the residential framework of the District. The exception is the Safeway supermarket. The store's brown, concrete block walls and red, Mansard roof appear out of character with the general architectural sytle of other area structures.

The District is harmonious in its layout and architecture, giving a pleasing impression of form, color, and texture. The scale of the buildings relates well to the pedestrian environment (Figure 10, page 36). Light colors, and wood and stucco exteriors are predominant. Yard maintenance appears to occur on a regular basis, as front lots are generally well kept and clean.



Neighborhood Housing, 48th Ave. and Cabrillo Street. (View looking north; trees of Sutro Heights Park define skyline)

Figure No. 10

2. Views of the Site

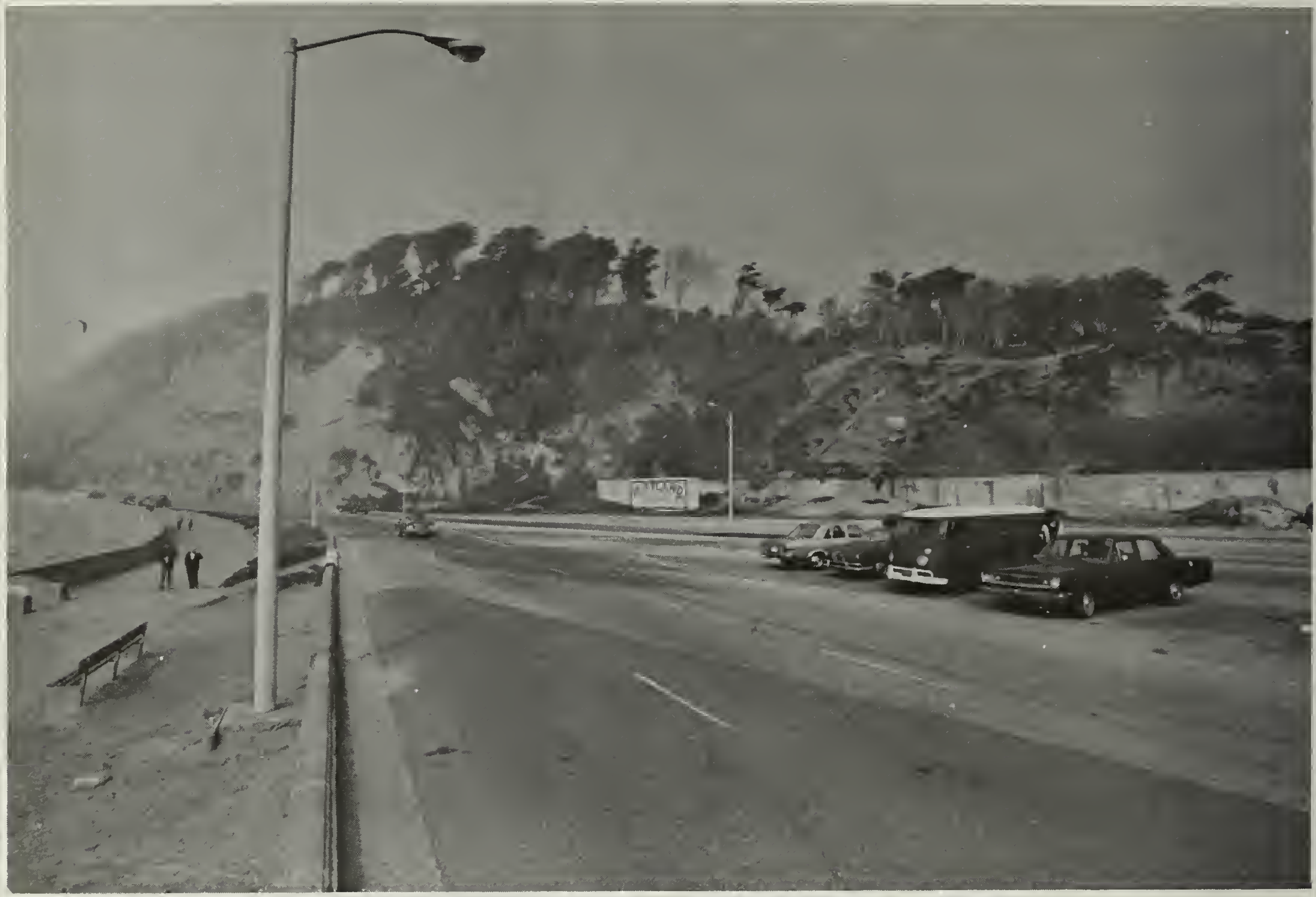
From the north, the project site is accessible by vehicle via Point Lobos Avenue. Proceeding west and then south down Point Lobos Avenue toward the Great Highway, Louis' Restaurant, Pronto Pup, and the Cliff House compete for visual attention against the backdrop of the Pacific Ocean. The steep topography of Sutro Heights Park becomes apparent on the left. Continuing downhill, the full length and width of the Great Highway come into view. Views toward Ocean Beach and the Pacific Ocean are unobstructed after one passes the Cliff House.

Because the project site encompasses a four-block area and is in a barren and roughly graded condition, it is a major feature in the field of vision as one proceeds south from the Cliff House area.

To approach the project site from the south, one must travel along the Great Highway. The site is not as apparent when traveling north, because it is at the same elevation as the Highway. The west border of Golden Gate Park is a major element in the field of view south of the project area. The north block (Parcel 4) is the most visible portion of the site when viewed from the Great Highway. (Figure 11, page 38).

The steep, rocky slopes of Sutro Heights Park are visible to the north beyond the project site. Because the site contains no view-obscuring structures, Sutro Heights Park is a major feature in the landscape, and it terminates the linear alignment of the Great Highway. Cypress trees grow on top of the cliff. However, the continuum of topography and green space is broken by open excavations and debris that characterize the project site.

From Sutro Heights Park, looking over the project site, there are expansive views of beach, ocean, and portions of the Sunset District, south of Golden Gate Park. Outlying neighborhoods and the western portion of Golden Gate Park can be seen as a broad plain, enhanced by occasional gradual rises



Parcel 4

(View looking north toward the slopes of Sutro Heights Park)

Figure No. 11

and dips in the landform. Visible are ridgelines of coastal hills extending down the Peninsula, where fog and haze penetrate lower elevations, emphasizing ridgetops. In contrast, the width of the Great Highway and the adjacent sea wall tend to overpower the parallel sand beach. The Safeway parking lot and the large paved bus turnaround area on the project site contradict the organized expanse of residential structures lining adjacent streets (Figure 12, page 40).

Views to the ocean are available from the project site, and increase in extent from slopes of the north block (Parcel 4) near the base of Sutro Heights Park.

E. TOPOGRAPHY, GEOLOGY, AND SEISMICITY

1. Topography

Topographically, the project site can be divided into two parts: the flat areas of Parcels 1, 2, 3, and 4, and the sloping cliffs of Parcel 4. The total elevation change of the site is approximately 120 feet from Parcels 1, 2, and 3 to the northern property line on Parcel 4 (Figure 13, page 41).

2. Geology

The project site is part of the California Coast Ranges, and rocks associated with these mountains are present in the site's vicinity. The steep cliffs of Sutro Heights Park abutting the northern project boundary consist of altered sandstone and shales from the Franciscan Assemblage. Severe fracturing of these rocks had caused the cliff facing west towards the Great Highway to erode, resulting in rocks falling onto the road. The west-facing slope has been stabilized by gunnite[1]

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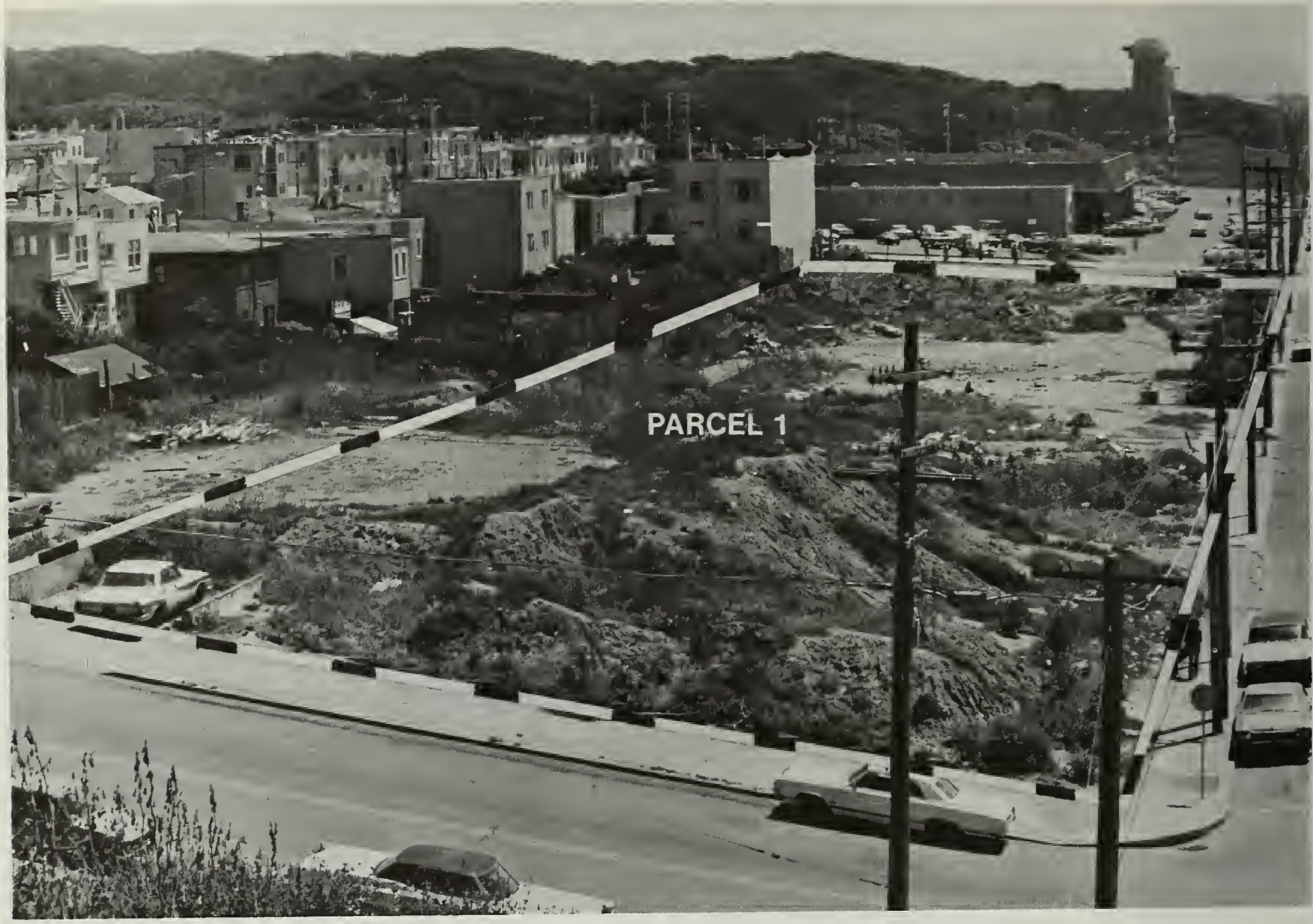
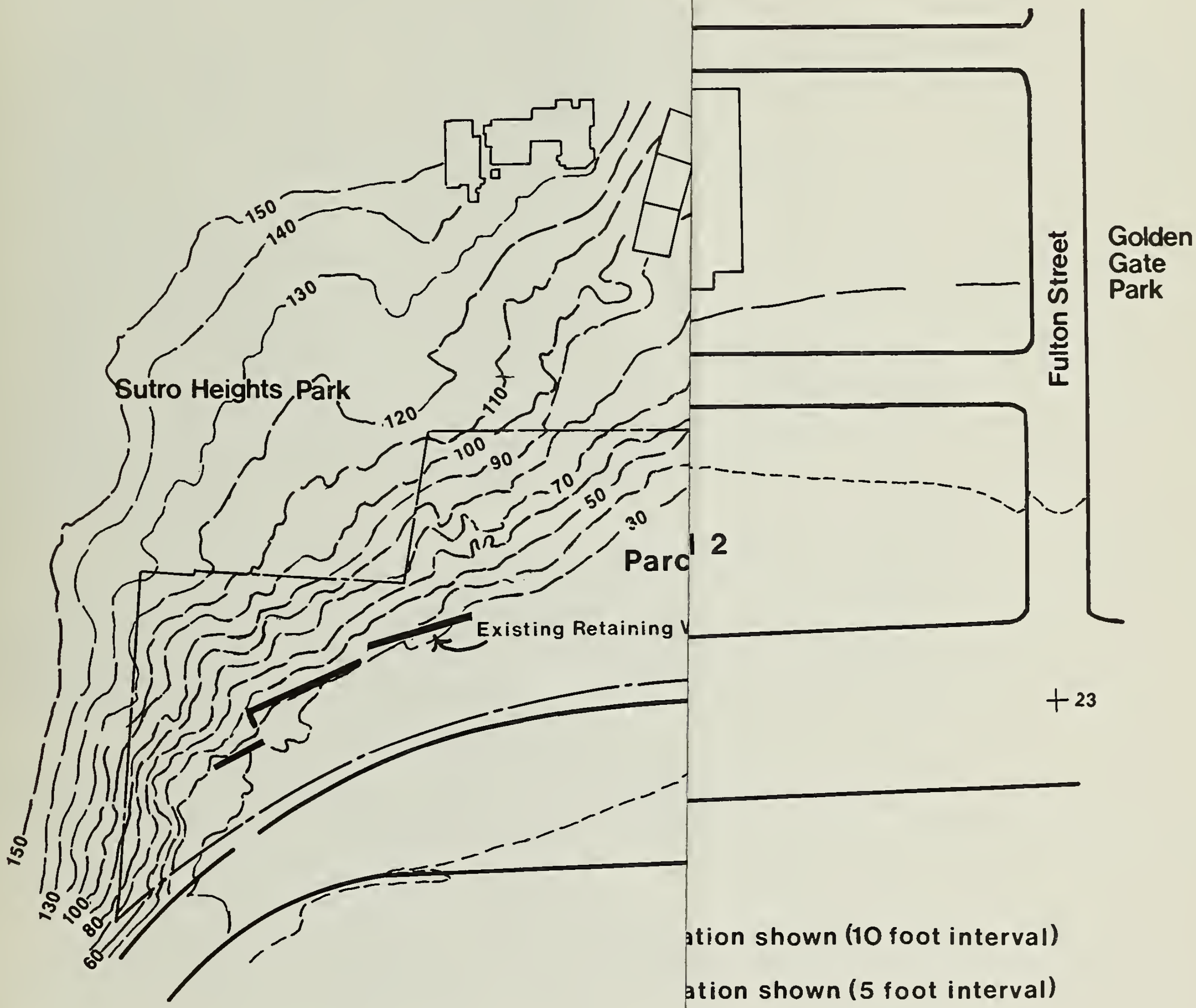
[1] Gunnite is a substance similar to concrete that can be sprayed onto unstable slopes.



Parcel 1 (View looking south toward Cabrillo Street and the Safeway food store)

Figure No.12



Existing Topography

NOTE: Elevations are based on Mean
of 1929. 8.6 feet above M.S.

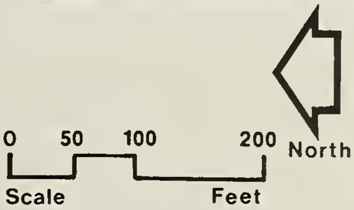
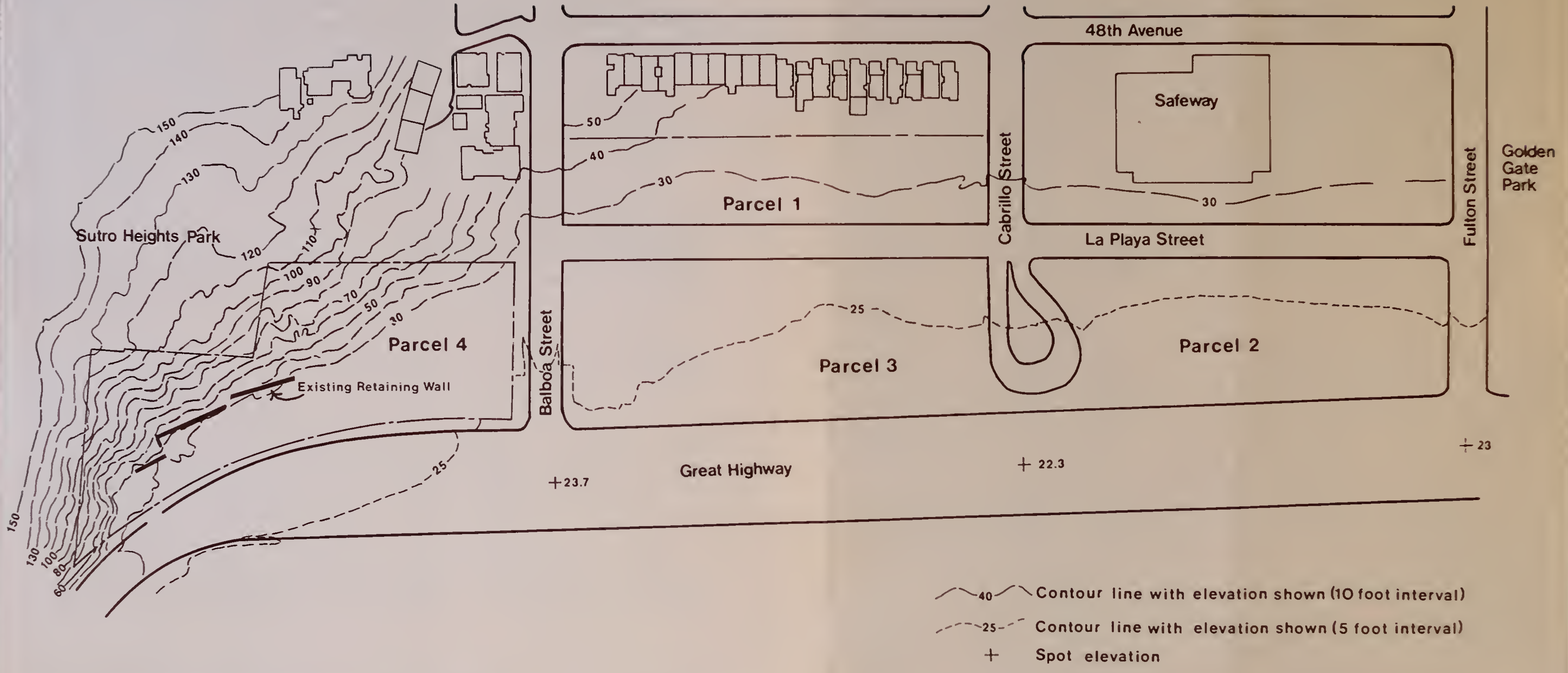


Figure No.13



Existing Topography

NOTE: Elevations are based on Mean Sea Level (M.S.L.) datum of 1929. 8.6 feet above M.S.L. equals 0.0 City Datum.

0 50 100 200
Scale Feet
North

Figure No.13

to protect against future ravelling. The south slope facing the project site has not been protected.

The four parcels of the project site exhibit different geological conditions. On Parcel 4, the Franciscan bedrock is overlain by the Colma Formation of Pleistocene Age (two million years old). This formation is old estuarine and beach deposits that are slightly cemented and cohesive. The slope stability of the Colma Formation is fair to good, except for clay-free layers.[1] According to borings taken on the site,[2] the Colma Formation on Parcel 4 is predominantly of sandy material, which renders the slopes unstable. The instability of the slopes is evident on the project site: slumping has taken place, resulting in the rupture of a concrete box culvert that traversed the southeast slopes, and severe gullying and downslope movement have occurred, creating a micro-landscape known as "badlands."

Overlaying the Colma Formation on Parcel 4 is dune sand; the sand has a uniform grain size and is unconsolidated. The dune sand is resting on the Colma Formation at an angle of approximately 10 degrees.

Parcels 2 and 3 have been excavated to a depth of about ten feet; the bottom consists of sand from the Colma Formation, with the depth to bedrock about 70 feet. There are some piles of fill on Parcels 2 and 3.

Parcel 1 has not been excavated, and several piles of fill have been placed on the surface. The surface material is approximately 10 feet of artificial fill overlaying the Colma Formation. The depth to bedrock is about 80 feet.

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[1] Schocker, J. "Geology of the San Francisco North Quadrangle, California," Geological Survey Paper 782, 1974.

[2] Lee and Praszker, Consulting Civil Engineers, Report on Soil & Foundation Investigations, Seal Rock Development, San Francisco, California, 6 December 1972.

3. Seismicity

The San Francisco Bay Area is one of California's major active seismic areas. Three major active fault zones[1] are relatively close to San Francisco. The San Andreas Fault, trending northwesterly, is located about two miles west of the project site (Figure 14, page 45). In 1906, the San Francisco earthquake (estimated magnitude 8.25 on the Richter Scale) caused extensive damage from liquefaction[2] and groundshaking. In April 1979 an earthquake occurred on the Fault, with epicenter near Burlingame, of magnitude 4.2; no damage was reported in San Francisco. It is generally believed that forces continue to accumulate along the Fault, and that movement can be expected again at some future date.

The Hayward Fault, which passes about 20 miles northeast of the project site at its closest point, has not shown evidence of linear displacements in recent times, but creep has occurred at a rate of one-half foot in the last 50 years. The Calaveras Fault, which passes about 30 miles northeast of the site, has also shown evidence of creep, particularly near its southern end, but no linear displacement has been observed in recent times.

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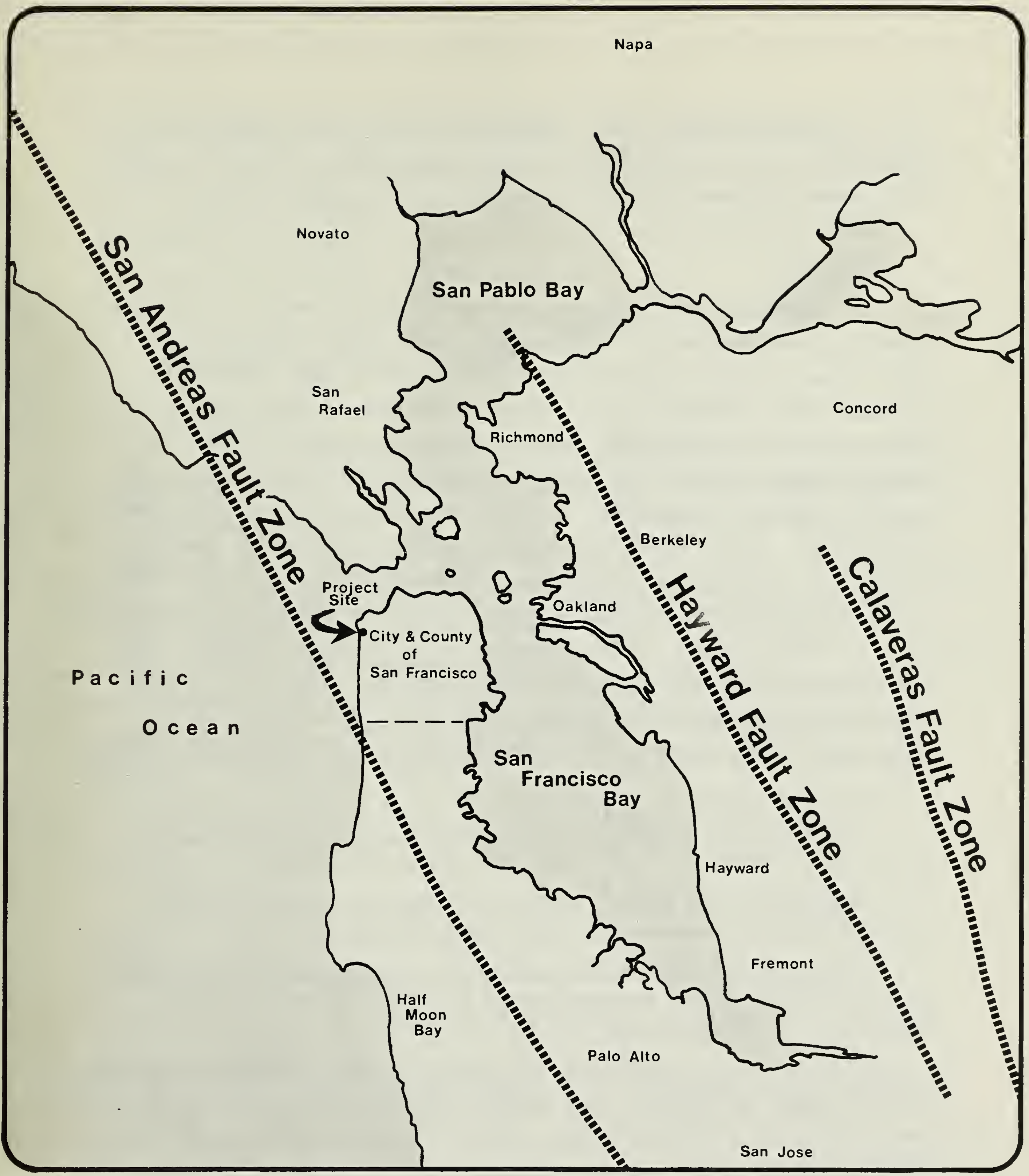
[1] An active fault is one that has shown movement, as evidenced by linear displacement or creep, within the past 11,000 years.

[2] Liquefaction: Earthquake-induced transformation of a stable granular material, such as sand, into a fluid-like state, similar to quicksand.



Active Fault Zones in the San Francisco Bay Area

Source: U.S. Geological Survey/ Brown, 1970

Figure No.14

The inactive[1] City College and San Bruno Faults are located in the vicinity of the proposed project, but are not considered to pose seismic hazards in the project area.

4. Tsunamis

Tsunamis are long-period waves generated by earthquakes, undersea landslides, or volcanoes; they travel through the open ocean at high velocities. During this deep-water propagation, wave heights may be no greater than one or two feet above the ocean surface. Upon reaching shallower water of coastal areas, the waves greatly increase in height, and may cause localized flooding. In determining potential areas of inundation, the predicted wave run-up[2] is examined. Tsunami prediction is still a relatively imprecise science, and state-of-the-art studies suggest a ±40% margin of error on predictions.

For coastal areas adjacent to the Great Highway, the run-up is estimated to reach elevations of -3.6 to -1.6 feet[3] for the once-in-50-year event, -0.6 to 11.4 feet for the once-in-500-year-event.[4, 5] The elevation of the Great Highway near the project site is +22 feet. If a tsunami should occur during a period of extreme high tide (eight feet or more above mean lower low water), the above mentioned run-ups could be increased by three to five feet. This could be considered the once-in-1,000-year event.

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[1] An inactive fault is one that shows no evidence of move-ment within the last two million years.

[2] Run-up: The height above still-water level reached by a wave as it washes up a shore or structure.

[3] These negative elevations occur because the elevations used in this report are expressed as City Datum, not mean sea level; 0.00 City Datum = 8.6 ft. MSL.

[4] J.R. Ritter and W. R. Dupre, Map Showing areas of potential Inundation by Tsunamis in the San Francisco Bay Region, California, U.S. Geological Survey, San Francisco Bay Region Environment and Resources Planning Study, Basic Data Contribution 52, Menlo Park, 1972.

[5] A. W. Garcia and J.R. Houston, Tsunami Predictions for Monterey and San Francisco Bays and Puget Sound, U.S. Army Corps of Engineers Technical Report H 75 17, 1975 (furnishes data for the Golden Gate).

F. HYDROLOGY AND WATER QUALITY

1. Surface Water

There are no creeks, lakes, springs, or other surface water resources on the project site; the site is approximately 400 feet east of the Pacific Ocean, at elevations which range from 28.6 feet to 138.6 feet City Datum.[1]

The natural topography of the site results in a generally west and southwest flow of surface runoff from rainstorms. Demolition of the Playland structure has resulted in the removal of all impermeable surface materials on the site except the existing roads. Based on existing site topography, and the lack of impermeable surface area, there would be no surface runoff from Parcels 2 and 3 under existing conditions; all rain falling on these areas would percolate directly to the groundwater table.

The surface sand on parcels 1 and 4 is underlain by the much less permeable Colma Formation and sandstone bedrock materials. Precipitation falling on these parcels rapidly infiltrates the permeable sand, and then flows laterally downhill (westward) along either the Colma Formation or sandstone bedrock contact. At the base of Parcel 4, this water flows toward the Great Highway, and is collected and discharged into the combined sewer-storm drain system. This rainfall percolation has resulted in extensive erosion and gullying of the exposed face of the hill slope below Sutro Heights Park. Strong winds at the site have also contributed to the erosion process. For Parcel 1, the water flows onto La Playa Street, where it is collected and enters the combined sewer-storm drain system.

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[1] 0.00 City Datum = 8.6 ft. above mean sea level.

2. Groundwater[1]

Eighteen soil borings made on the site show that groundwater buildup occurs above sea level. Along the west property line, south of Balboa Street, the groundwater level is at elevations of approximately 14 to 16 feet City Datum. Slight diurnal fluctuations at the site probably are caused by the effects of tidal waters. A variation appears in the groundwater level along the west property line, north of Balboa Street. The highest recorded level in this area has been established at approximately 17 feet City Datum MSL.

G. VEGETATION AND WILDLIFE[2]

The major plant community on the project site is classified as coastal strand.[3] Coastal strand is adapted to, and influenced by, salt spray, mist, fog, and blowing and drifting sand. Most of the site vegetation has re-invaded the area since the demolition of Playland-at-the-Beach. Native vegetation on the site includes such species as dune grass, sand verbena, sea rocket, bush lupine, beach strawberry, and the dune tansy (see Figure 15, page 50), listed as a "very rare and endangered plant" by the California Native Plant Society.[1] Exotic (nonnative) species found on the site include three species of iceplant, a variety of thistles, yarrow, curly dock, plume albizia, and blackwood acacia.

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[1] Source: Lee and Praszker, Report on Soil and Foundations Investigations, Seal Rock Development, San Francisco, 6 December 1972.

[2] This section contains information summarized from the Environmental Impact Report EE7, Seal Rock Development Company, Certified 7 December 1972. On file at Department of City Planning, 100 Larkin Street, San Francisco, CA 94102.

[3] P.A. Munz, A California Flora, Berkeley: University of California Press, 1970. The coastal strand community is found on sandy beaches and dunes scattered along the coast. Annual rain-fall is 15 to 70 inches, with much fog and wind; the growing season is 12 months, and there are small seasonal and diurnal fluctuations in temperature.

The vegetation on Parcel 4 is of particular interest due to interactions between the flat portion of the parcel, the highly erosive bluff, and the relatively undisturbed plant community adjacent to the project area, commonly referred to as the dune meadow (Figure 16, page 51). The flat portion consists of vegetation common to Parcels 1, 2, and 3, growing among demolition debris. The bluff face is characterized by scattered distribution of vegetation, with continuous vegetation covers of albizia, acacia, grasses, rushes, iceplant, and dune tansies occurring where soil erosion is not severe. Vegetation on the bluff face is sand-stabilizing, effective for erosion control, and may reestablish itself over the entire bluff, if undisturbed.

The dune meadow is a relatively flat sandy area above the bluff, and lies to the north and northeast of the site. The most common species in the area include the dune tansy, bush lupine, iceplant, Monterey cypress and albizia. The meadow is impacted by recreational users, whose trampling over the area kills plants and exposes the sand to further erosion. Trampling and climbing also easily uproot dune vegetation.

The dune tansy (Tanacetum camphoratum) is found only on Parcel 4 of the project site. The bulk of the tansy populatin lies outside the site, on the dune meadow, and is suspected

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[1] W. Robert Powell, Inventory and Rare and Endangered Vascular Plants of California, 1974, revised 1976 and 1977.

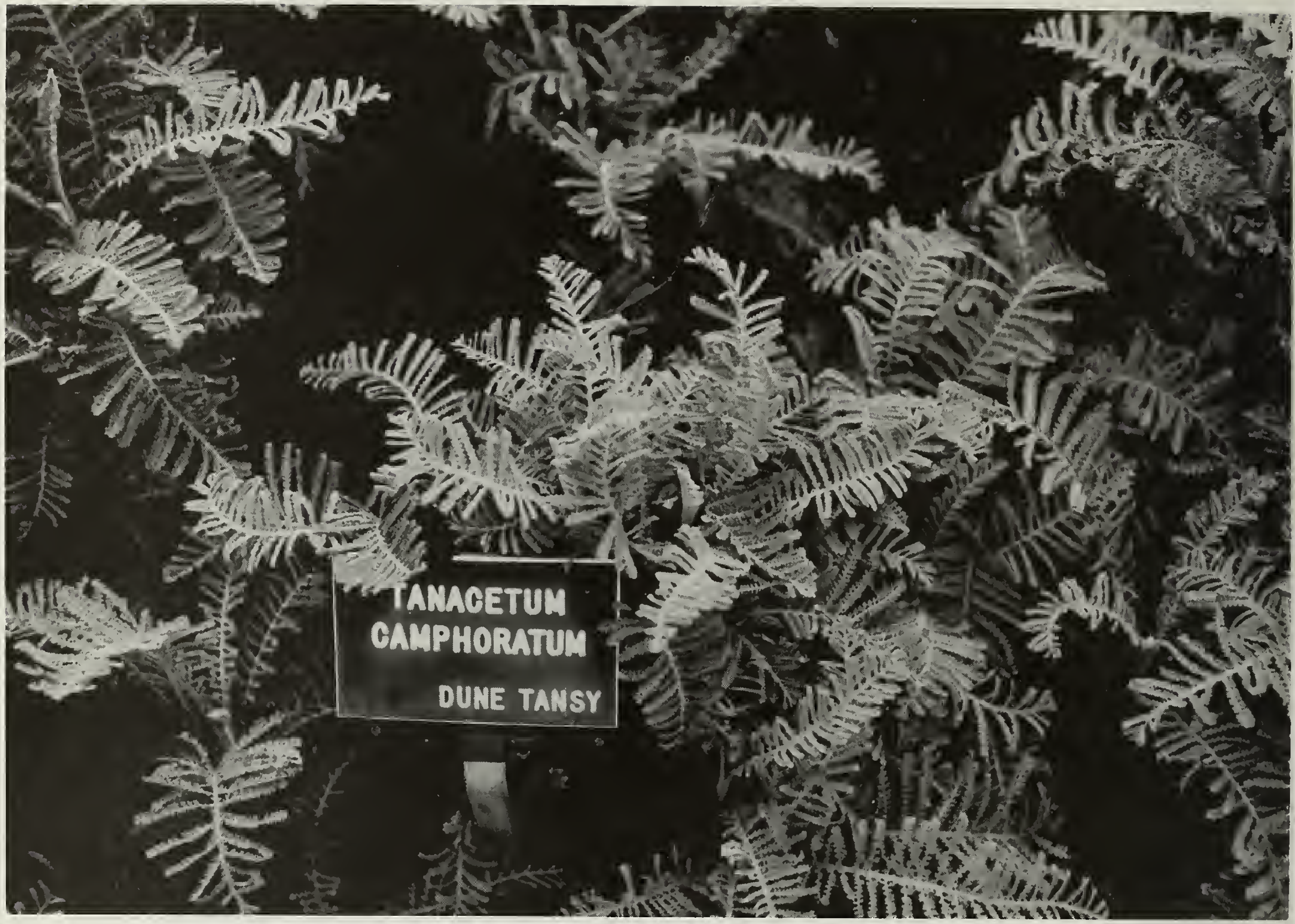
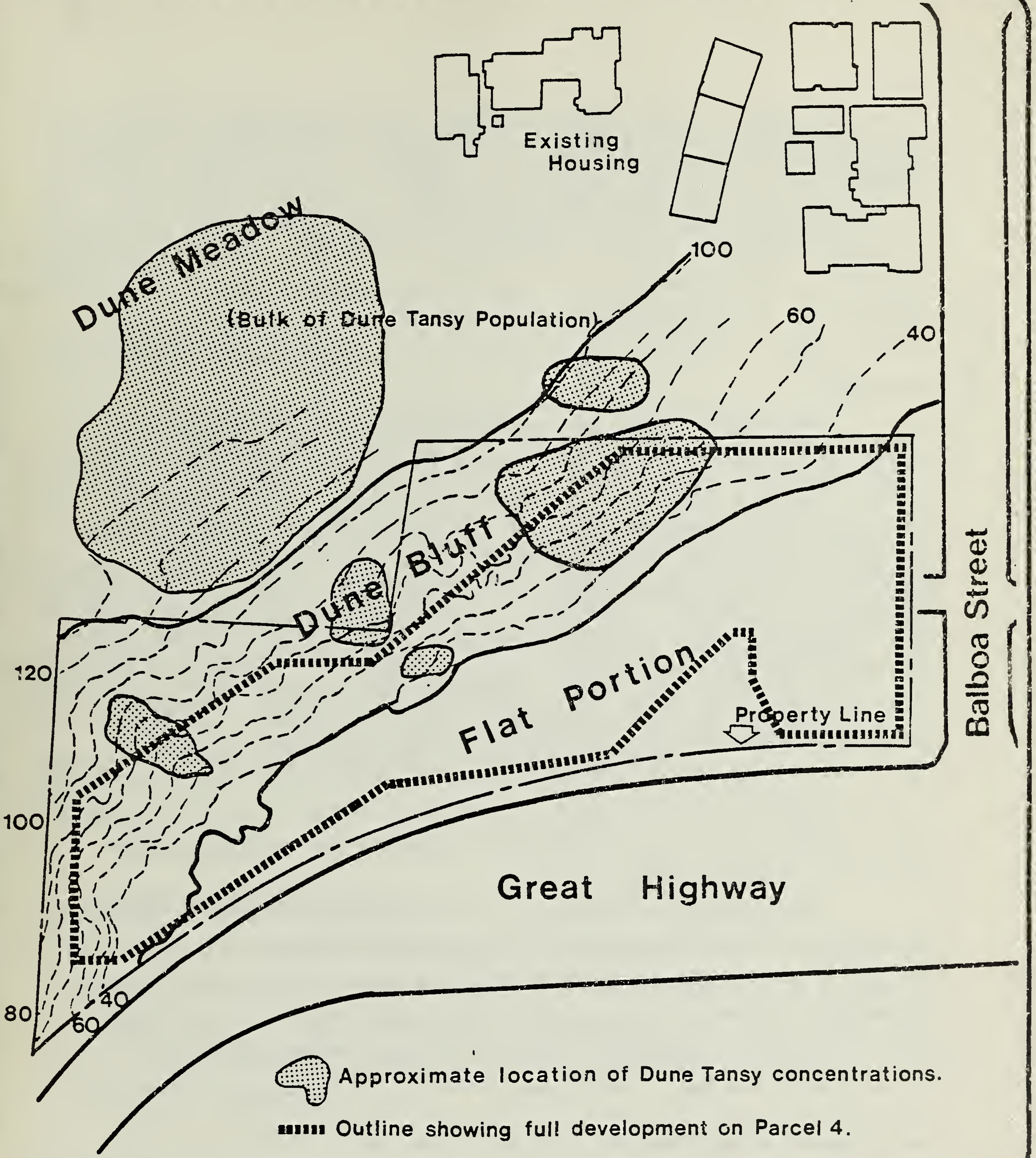


Photo by Steve Krenzelok
Location: Arboretum, Golden Gate Park

Dune Tansy

Figure No.15



Dune Tansy Location Map

Figure No.16

to occur naturally in that location. An estimated 200-400 individuals occur on Parcel 4, of which a naturally occurring population of 100-200 individuals are on a dune slope on the southeast half of the site and 75-150 are in disturbed locations on the bluff face on the northeast half of the property (Figure 16, page 51). The population is also establishing itself in disturbed areas near the bottom of the bluff, in the more flat areas of the site. The dune tansy does not occur in areas of severe erosion.

The dune tansy is located on the central California coast in isolated areas from Santa Cruz to Sonoma County; it occurs nowhere else in the world naturally. It is rare by virtue of the disappearance of the specialized habitat which it favors. Of the six potential sites identified in San Francisco,[1] staff of Environmental Impact Planning Corporation only located four where the dune tansy occurred. The populations at Sunset Heights Park and Grand View Park are marginal (under 100 individuals apiece) and occur in their natural habitat. The populations at Sutro Baths and Sutro Heights Park are largest of the four sites and appear to be in healty condition. The dune tansy is not included in the List of California rare plants designated by the State Parks and Recreation Agency (Cal. Admin. Code Title 14, Section 670.2).

The northern parcel is the only portion of the proposed project site that contains natural wildlife habitats. Parcels 1, 2, and 3 are frequented by scavenging birds and animals (gulls and rats), usually associated with vacant lots in the City.

Insects comprise the major faunal components found in the dune meadow. Few mammals live in the meadow, because

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[1] Endangered Plant Locations in San Francisco, San Francisco Department of City Planning, and Final Environmental Impact Report, Golden Gate Heights Residential Development, 3 July 1975, Department of City Planning, EE 74.72.

because the dune sand makes burrowing difficult. There are probably incursions of rodents from the adjacent Park searching for food. The meadow is visited by many species of birds, including gulls, swallows, a variety of sparrows, wren-tit, and robin.

H. CULTURAL RESOURCES

The Playland-at-the-Beach amusement park which was formerly located on the project site was completely demolished in 1973. With the exception of a retaining wall on Parcel 4, no structures from the project exist on the site today.

There are no known archaeological resources on the project site, and a reconnaissance revealed no visible evidence of the presence of archaeological remains.[1] However, records[2] indicate the existence of a known complex of archaeological sites at Point Lobos, approximately .3 miles to the north of the site. These sites were designated on the National Register of Historic Places in November 1976.

I. TRANSPORTATION

1. General Accessibility

As the proposed project site is bounded on the west by the Pacific Ocean, access is possible only from the north, east and south. Figure 17, page 54), shows the general accessibility of the project site for both roadways and transit routes.

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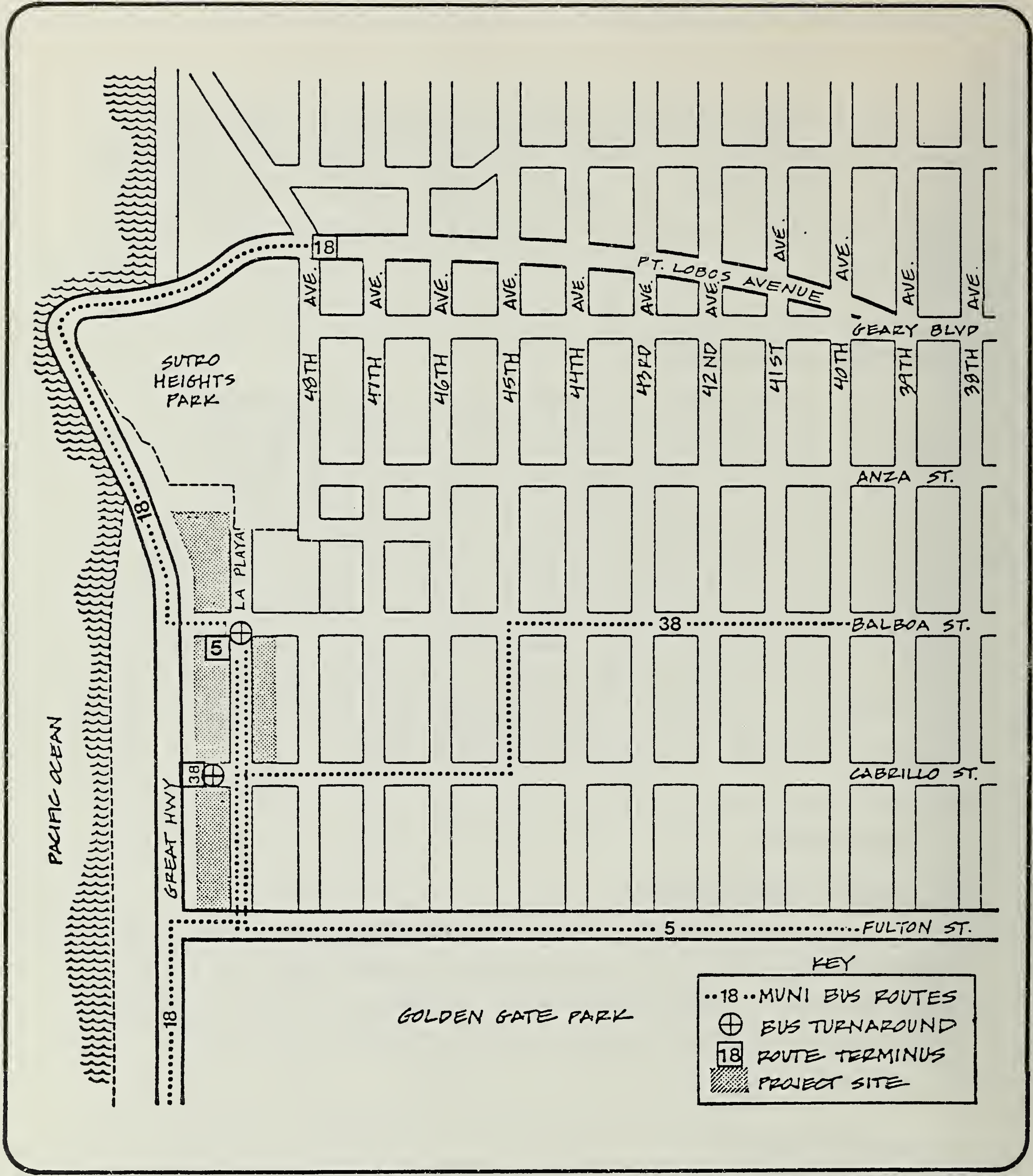
[1] Letter to EIP from David Chavez, Consulting Archaeologist, 19 October 1978.

[2] Roger E. Kelly, "Archaeological Resources of Golden Gate National Recreation Area," National Park Service, 1976.



Access System

North

NOT TO SCALE

Figure No.17

Principal roadway access is provided by the Great Highway, to the west of the site, and Fulton Street, to the south of the site. The Great Highway is a limited access road that runs adjacent to the western boundary of the site and continues in a southerly direction, paralleling the shoreline past Golden Gate Park and the Sunset District to Lake Merced. To the north, the road continues as Point Lobos Avenue, around Sutro Heights Park, before heading east to join Geary Boulevard. Fulton Street, at the southern margin of the project site, is the principal access roadway to the east, running along the northern edge of Golden Gate Park.

Transit access is provided by MUNI, which operates three bus routes (the 5 Fulton, 18 Sloat and 38 Geary) in the area, two of which (the 5 and 38) terminate at La Playa Street.

2. Traffic

The Great Highway and Point Lobos Avenue are recreational streets,[1] as classified by the Transportation element of the City and County of San Francisco Comprehensive Plan.[2] The Great Highway north of Lincoln Way is comprised of three lanes in each direction, separated by a parking area in the center of the road. Between Balboa and Fulton Streets, traffic volumes in July 1978 during the evening peak (4:30 p.m. - 5:30 p.m.)

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[1] Defined in the Transportation Element of the Comprehensive Plan adopted by Resolution 6834 of the San Francisco City Planning Commission, 27 April 1972 (page 19) as "a special category of street, whose major function is to provide for slow pleasure drive, cyclist and pedestrian use . . "

[2] San Francisco Department of City Planning, adopted by Resolution 6834 of the San Francisco City Planning Commission, 27 April 1972.

were 1,330 vehicles,[1] about 9% of the estimated average daily traffic (ADT) of 14,700 vehicles. South of Fulton Street, ADT on the Great Highway is an estimated 20,000 vehicles, with about 13%, or an estimated 2,530 vehicles, traveling during the evening peak hour.

Existing traffic volumes for ADT and the evening peak hour for roads in the vicinity of the proposed project site are shown in Figure 18 (page 57).

Point Lobos Avenue is a 4-lane road, 2 lanes in each direction, with parking on the west side. Evening peak hour volumes in July 1978 were 1,345 vehicles, or about 9% of the estimated 14,900 ADT.

Fulton Street is an undivided major thoroughfare[2] and transit preferential street[3] of two lanes in each direction. Evening peak hour in July 1978 was about 1,130 vehicles between La Playa Street and the Great Highway, about 13% of the estimated 8,700 ADT. The traffic levels of service[4] during the evening peak hour are estimated at level of service A on the Great Highway and level of service B on Fulton Street.

Balboa Street and Cabrillo Street are both 2-lane roads. Balboa Street intersects with the Great Highway, while Cabrillo Street terminates at La Playa. While the Great Highway and Fulton Street function as routes for through traffic, Balboa

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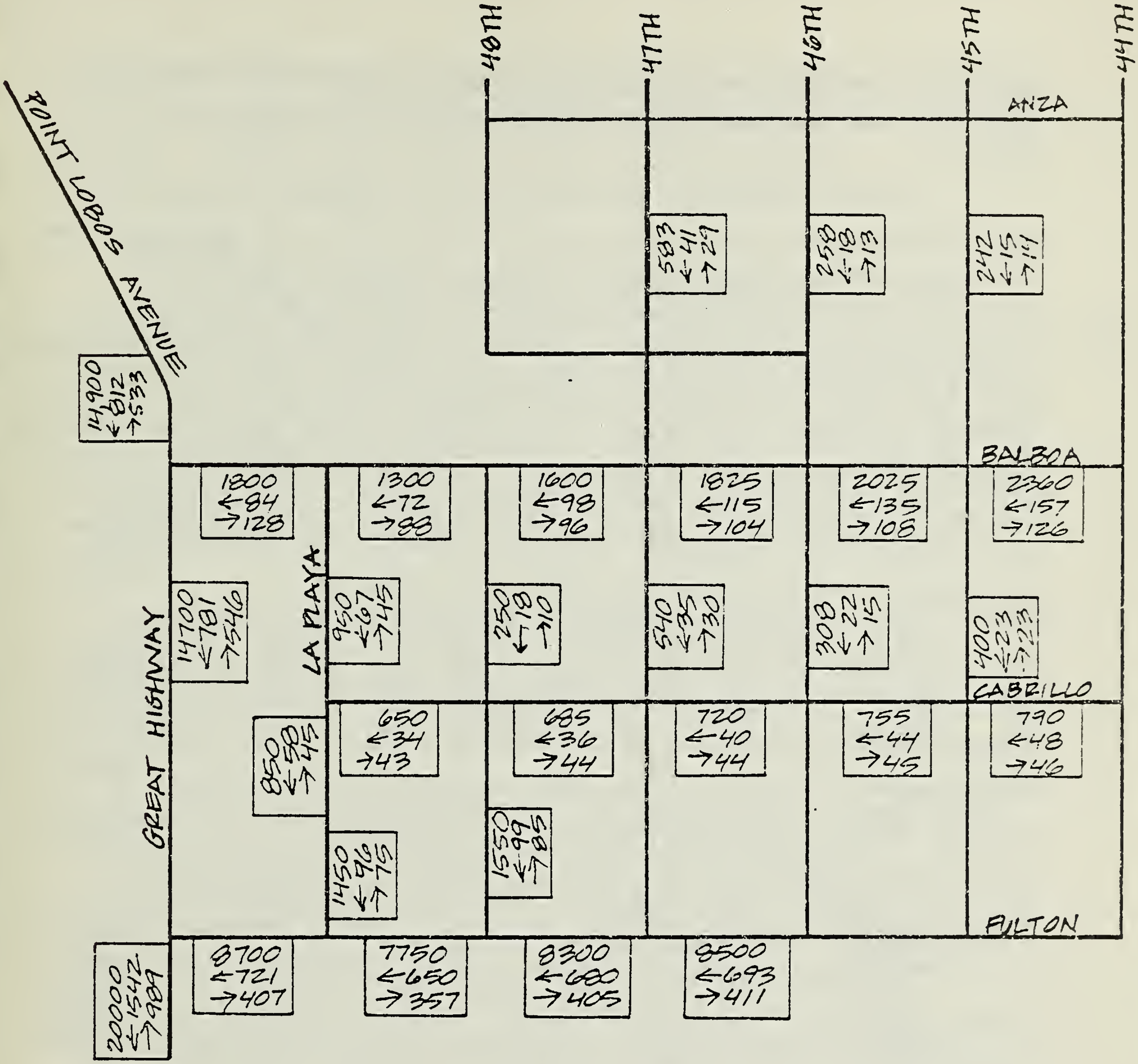
[1] Appendix A, page 185, details sources of traffic information.

[2] San Francisco Department of City Planning, Comprehensive Plan: Transportation. Defined as a "crosstown thoroughfare whose primary function is to link districts within the City . . ." (page 19).

[3] Defined in the Comprehensive Plan as "an important street for transit operations where interference with transit vehicles by other traffic should be minimized."

[4] See Appendix A, page 198, for definitions of levels of service.



SOURCES: CITY OF SAN FRANCISCO TRAFFIC COUNTS, JANUARY 1977 (ADJUSTED ON BASIS OF RECENT PEAK PERIOD COUNTS.)
ALAN M. VOORHEES TRAFFIC COUNTS, JANUARY 1977 (ADJUSTED ON BASIS OF RECENT PEAK PERIOD COUNTS.)
ALAN M. VOORHEES TRAFFIC COUNTS, JULY 1978. (ESTIMATES BY AMV)

ADT ON LOCAL ROADS ESTIMATED FROM PEAK TOTALS

Existing Traffic Conditions

North

KEY
ADT
← PM PEAK
→ PM PEAK

Not to scale

ADT = Average Daily Traffic
PM Peak is from 4:30 to 5:30

Figure No.18

and Cabrillo Streets serve more as local access/distributor roads to the residential and commercial[1] land uses in the area.

In the immediate vicinity of the proposed project site, evening peak hour traffic levels in July 1978 were 212 vehicles on Balboa Street between Great Highway and La Playa, and 77 vehicles on Cabrillo Street between La Playa and 48th Avenue. Corresponding average daily traffic on these streets is estimated at 1,800 and 650 vehicles, respectively.[2] Evening peak hour traffic volumes in July 1978 on La Playa Street were 112 vehicles between Balboa and Cabrillo and 171 vehicles on La Playa at Fulton. Corresponding ADT at these locations are estimated at 950 and 1,450 vehicles. Volumes east of the project site are higher and are shown in Figure 18, page 57).

The north-south roads of La Playa Street, 47th and 48th Avenues, also serve primarily as local access/distributor roads. La Playa and 48th Avenue extend only as far as Balboa Street to the north and Fulton Street to the south. Forty-Seventh Avenue is the most westerly direct connection between Geary Boulevard and Point Lobos Avenue in the north, and Fulton Street in the south. Between the Great Highway and 43rd Avenue, 47th Avenue is the only north-south street with a direct connection across Golden Gate Park to the south.

Traffic data available for January 1977 indicate that Sunday peak hour traffic (3 p.m. - 4 p.m.) is about 20% higher than weekday evening peak hour traffic on Fulton Street, and about 80% higher on the Great Highway. The same data indicate ADT on a Sunday is about 24% higher than weekday ADT on Fulton Street, and about 47% higher on the Great Highway.

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[1] The Safeway supermarket located in the block bounded by La Playa, Cabrillo, 48th Avenue and Fulton.

[2] ADT on all local access/distributor roads was estimated assuming evening peak hour traffic constitutes 12% of ADT. This is higher than the 9% observed on Point Lobos and the Great Highway due to the lower proportions of through and rec-reational traffic on the local distributor roads.

3. Parking

Parking demand in the area may be classified into three types relating to the three principal land uses: recreational, commercial, and residential. Parking for recreational trips occurs on the Great Highway, and about 500 free public parking spaces are provided in the center and on the east side of the road, adjacent to the proposed site. Parking is prohibited throughout the day and night on the west side of the Great Highway.

A private parking lot surrounds the Safeway supermarket located in the block bounded by La Playa, Cabrillo and Fulton Streets and 48th Avenue. This lot is used by Safeway customers and has two entrances/exits onto each of the surrounding roads.

The remaining parking in the area is on-street residential parking on Balboa Street and 48th Avenue.

On-street parking demand in the immediate vicinity of the proposed site is low. On the day traffic counts were conducted (a Thursday) use of parking spaces on the Great Highway was estimated at 15-20% between 4 p.m. - 6 p.m. On Balboa Street, between the Great Highway and La Playa, and on the full length of La Playa Street, only an occasional parked car was observed during the same period. The land adjacent to these street sections is currently undeveloped, with the exception of the Safeway store, which accounts for the levels of parking on these local roads.

On the developed streets to the east of the project site, e.g., 48th Avenue, parking levels are higher due to residential on-street parking.

Parking on the Great Highway, because related to recreational trips, is generally higher on weekends than during the week. Overall parking levels on the Great Highway vary, however, with the weather conditions. Local site visits by the traffic consultant[1] indicated weekend parking to be at about 20-30% occupancy, although the weather on both visits was overcast. On bright, sunny days it is expected that parking levels would be considerably higher.

4. Transit

MUNI operates three bus routes in the area, two routes of which terminate at La Playa Street. These routes, and the locations of the bus turnarounds, are shown in Figure 17, page 54.

The turnarond at Balboa and La Playa is used by the 5 Fulton which MUNI operates with electric trolley vehicles. This route runs along La Playa Street from the terminus at Balboa and east along Fulton Street to an eventual destination in downtown San Francisco. The 38 Geary operates diesel motor-coaches, using the turnaround facility at the end of Cabrillo Street. The route follows Cabrillo Street, 45th Avenue, Balboa Street, and 31st Avenue before joining Geary Boulevard and continuing to downtown San Francisco. Limited stop and express service is operated during the evening peak period. The third route serving the proposed project area, the 18 Sloat, is a crosstown route running from Stonestown in the south to Point Lobos Avenue and 48th Avenue north.

Table 2 summarizes the principal features of MUNI transit service in the area, including service frequencies and evening peak period load factors. With the exception of the 38 Limited/ Express Service, the bus lines serving the proposed project

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[1] August 1978 and May 1979.

TABLE 2

MUNI TRANSIT SERVICE TO PROJECT SITE

Route	Type of Vehicle	Service Frequencies (minutes)				PM Peak Hour Load Factors[1/]		Location of Maximum Load Point
		AM Peak	Midday	PM Peak	Evening	At Project[2/] Site	At Maximum[2/] Load Point	
5 - Fulton[3/]	Trolley	3-4	6-8	3-8	15	0.0-0.10	1.22	MacAlister/ VanNess
18 - Sloat[4/]	Diesel	10-15	15-20	15-20	15-20	0.90	0.90	La Playa/ Cabrillo
38 - Geary[5/]	Diesel	3-5	7-8	3-5	10	0.16	1.52[6/] (1.42)	Geary/Powell

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1/ Load factors provide an indication of passenger comfort, and are the ratio of the number of passengers on-board a vehicle to the number of passenger seats available on the vehicle. The maximum standard for trolley and diesel coaches in the peak periods is considered by MUNI to be 1.5 (San Francisco Municipal Railway, 5-Year Plan: 1979-1984). All load factors calculated as averages for the evening peak hour.

2/ Load factors calculated for peak direction: westbound (outbound from downtown) for Routes 5 and 38, southbound for Route 18.

3/ Load factors calculated from MUNI Traffic Check Data, Wednesday, April 26, 1978.

4/ Load factors calculated from MUNI Traffic Check Data, Tuesday, January 10, 1978.

5/ Load factors calculated from MUNI Traffic Check Data, Wednesday, April 12, 1978.

6/ During the evening peak, local Route 38 service terminates at Funston or 33rd Avenue, Limited and Express Route 38 service continues to Beach Terminus at La Playa. Load factor of 1.52 is for Limited/ Express service. Load factor of 1.42 is for all Route 38 vehicles at maximum load point site have average evening peak-hour load factors (at the maximum load points) below the MUNI standard of 1.5.[1] For the 38 Geary, while the load factor for all vehicles at the maximum load point is 1.42, the average load factor for Limited/Express service is 1.52, i.e., essentially at the MUNI p.m. peak-period standard. During the p.m. peak period it is this service that extends to the project, as local Route 38 service terminates at either Funston or 33rd Avenue. In the vicinity of the project site all routes operate with surplus capacity during the evening peak period, as indicated by the load factors shown in Table 2.

MUNI also operates night (OWL) services on the 5 and 38 bus lines. These services run between about 1 a.m. and 5 a.m., the 5 on an hourly headway and the 38 on an half-hourly headway.

MUNI bus stops are currently located on La Playa at both Fulton and Cabrillo (in both directions), on Balboa west of La Playa (westbound only) and on Cabrillo between La Playa and 48th Avenue (eastbound only).

5. Other Modes

Bicycle and pedestrian activity in the area is low and there are no special bicycle facilities. Pedestrian activity is principally on the Great Highway as people walk from parked cars to the beach and along the promenade, and in the vicinity of the Safeway supermarket as La Playa/Cabrillo. Pedestrian and bicycle activity on the Great Highway is also dependent on weather conditions due to its predominantly recreational nature.

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[1] Load factors provide an indication of passenger comfort, and are the ratio of the number of passengers on-board a vehicle to the number of passenger seats available on the vehicle. The maximum standard for trolley and diesel coaches in peak periods is considered by MUNI to be 1.5 (San Francisco Municipal Railway, Five-Year Plan: 1979-1984).

Pedestrian crosswalks are provided on the Great Highway at Fulton, Balboa, and opposite the Cabrillo Street MUNI turn-around. Crosswalks are also provided at the intersections of Cabrillo and La Playa, Cabrillo and 48th Avenue, across Fulton Street at the Great Highway, La Playa Street and 48th Avenue, and across Balboa Street at the Great Highway.

J. CLIMATE AND AIR QUALITY

1. Climate

The site experiences a general Mediterranean climate typical of central California coast areas. Table 3 shows the climatic conditions for downtown San Francisco. Compared to downtown areas, climatic conditions at the site are considerably more severe, particularly during the summer months.

Temperatures shown in Table 3 are generally moderate, with extremes muted by the nearness of the ocean. Both seasonal and diurnal variations in temperature are small. The temperatures at Ocean Beach are 5° -8° cooler than the downtown area. This is due to the heat island impact in the downtown area and the distance of the downtown area from the ocean.

Precipitation data indicates that 90% of the annual rainfall occurs between November and April. Although the summer months seldom have rainfall, moisture is still available to plants during this period in the form of fog drip. As the fog is carried onto the land by the prevailing westerly winds, small fog droplets are captured on plant leaf surfaces. The availability of this moisture source relieves much of the drought stress induced by the lack of rainfall. Most native plants along the Central California Coast (as well as successful introduced plants) are well adapted to take advantage of this moisture.

The winds along the San Francisco Coast are persistent from the westerly quadrant. Average wind speeds are fairly

TABLE 3

San Francisco Climatological Summary[1]

Month	Ave. Temp(^{O}F) Max.	Min.	Rainfall (inches)	Prevailing Wind Direction	Mean Speed (mph)	% Possible sunshine
JAN	55.8	45.5	4.55	N	6.7	56
FEB	58.6	47.3	3.66	W	7.5	62
MAR	60.7	48.6	2.93	W	8.5	69
APR	61.9	49.5	1.44	W	9.5	73
MAY	63.4	51.3	0.63	W	10.4	72
JUN	65.0	53.1	0.14	W	10.9	72
JUL	64.3	53.3	0.01	W	11.2	66
AUG	64.9	53.9	0.04	W	10.5	65
SEP	68.9	55.1	0.22	W	9.1	72
OCT	68.3	54.4	0.89	W	7.6	71
NOV	63.7	51.0	2.00	W	6.3	63
DEC	57.5	47.4	4.27	N	6.5	53

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[1] U.S. Department of Commerce, Local Climatological Data, San Francisco Federal Office Building, 1977.

high, with afternoon gusts commonly reaching the 20 mph range. Wind plays an important role in the comfort of this site and for the plant communities in the surrounding area.

Percentage of possible sunshine for downtown San Francisco is shown in Table 3. During fall, winter and spring, the site receives the same percentage of sunshine as downtown. This occurs because weather patterns are dominated by large scale weather systems; microclimate variations are less important. However, during summer months a definite local fog pattern develops, and the coastal areas receive about 25% less solar radiation than downtown San Francisco.

2. Air Quality

San Francisco's air quality is among the best in the Bay Area. A general description of the City's air quality can be found in a previous EIR for a San Francisco project.[1]

The factors which result in generally good air quality in San Francisco are particularly important in determining air quality in the vicinity of the proposed project. The site is located adjacent to the Pacific Ocean, and the winds are predominantly from the west all year. Consequently, there are no "upwind" pollution sources; the only air pollutant emissions would result from sources in the immedate vicinity of the project site. The overall project area currently experiences excellent air quality. Localized high levels of carbon monoxide can occur along major traffic routes, particularly when traffic congestion deelops and meteorological conditions prevent pollutant dispersal. Predictions of existing roadside CO level along the Great Highway, assuming adverse meteorological conditions, are shown in Section IV.J., Table 5 , page 115.

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[1] City and County of San Francisco, Department of City Planning. Neiman-Marcus Department Store Final EIR, EE 77.257, December 1978, pp. 42-43.

These data indicate that, even under adverse conditions, local air pollutant levels are below state and federal standards.

K. NOISE

The project site is affected by noise from vehicular traffic and surf noise from Ocean Beach. The traffic noise is caused by automobiles and buses travelling on local streets and the Great Highway.

Noise measurements were conducted at four locations both in and adjacent to the project site on 11-13 January 1977, and 4-7 August 1978. The noise data at each location were recorded in three 15-minute periods throughout the day.[1] A summary of measured noise data is shown in Table 4, along with short descriptions of the measurement locations. These locations are shown on Figure 19, page 68.

The dominant noise sources affecting the project site are: diesel-powered General Motors Corporation (GMC) buses (84 dBA[2] at 30 feet); diesel-powered American Motors Corporation (AMC) buses (71 dBA at 30 feet); and Flyer electric trolley

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[1] The day was divided into three parts, each of which represents a significant difference in human activity: rush hours (0700 - 0900 and 1600 - 1900 hours); midday (0900 - 1600 hours); and night (2200 - 0700 hours).

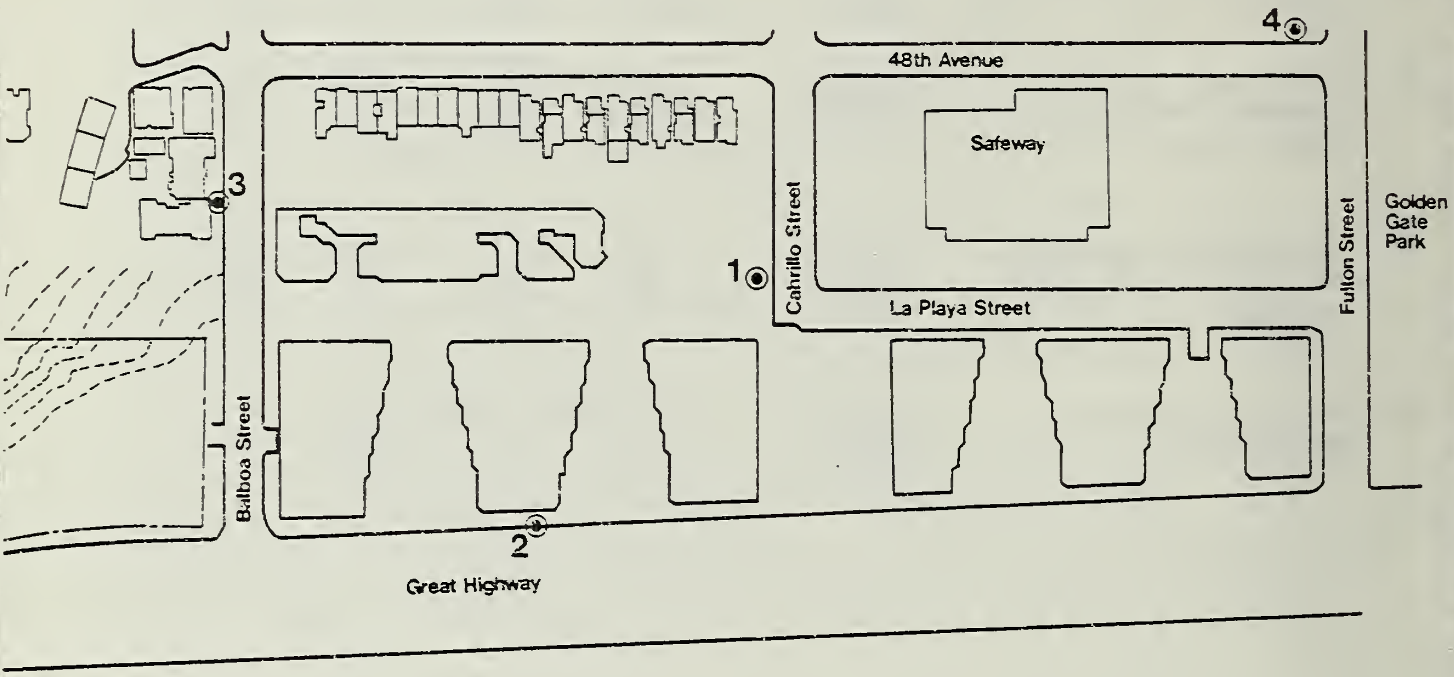
[2] The decibel (dB), as used in this report, is the unit of sound level referenced to the sound pressure corresponding to the threshold of hearing. The dBA (A-weighted decibel) accounts for the way the human ear responds to sounds of different frequencies. The L_{dn} (day-night equivalent sound level) is a 24-hour average with 10 dBA added to sound levels measured between 10 p.m. and 7 a.m. to account for people's heightened sensitivity to noise at night. The L_{10}, L_{50}, and L_{90} represent the A-weighted sound levels exceeded 10%, 50%, and 90% of the measurement period, respectively. Refer to Appendix B for a discussion of the fundamental concepts of environmental noise.

TABLE 4

Existing Noise Levels in dBA

Measurement Location	Time Period	L_{90}	L_{50}	L_{10}	L_{eq}
1. Northeast corner Cabrillo & La Playa	midday	54	59	68	65
	rush	55	59	70	64
	night	52	54	61	61
2. On Great Highway between Balboa & Cabrillo	midday	57	63	69	67
	rush	61	67	72	69
	night	56	58	64	61
3. On Balboa between La Playa and 48th Avenue	midday	54	57	66	62
	rush	59	64	71	68
	night	53	55	61	63
4. On 48th Avenue at Fulton	midday	-- not available			--
	rush	51	57	64	--
	night	51	52	56	--

*The L_{10}, L_{50}, and L_{90} are statistical descriptors indicating the noise levels which were exceeded 10, 50 and 90 percent of the time period, respectively. The L_{eq} is the equivalent sound level and is an alternative method for describing the average noise level. See Appendix B for additional information.



Noise Monitoring Locations

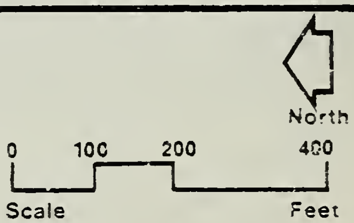


Figure No. 19

coach buses (70 dBA at 30 feet). Vehicular traffic noise from the Great Highway is primarily caused by automobiles but the noise levels of several noisy buses and trucks exceeded the average noise level by 15-25 dBA. When the traffic noise tempo-rarily abates, the surf noise prevents the noise levels from decreasing below 50-60 dBA.

L. COMMUNITY SERVICES

The San Francisco Wastewater Management Program is responsible for sewage collection and treatment in the City of San Francisco. The Richmond-Sunset treatment plan, located in the southwest corner of Golden Gate Park, processes wastewater from the area of the proposed development. Treated wastewater is discharged through the Mile Rock outfall near Lands End. The treatment plant is not large enough to treat the combined sanitary flows and rainwater runoff that flow in the San Francisco sewers during wet weather. When it rains, untreated sewage is overflowed onto Ocean Beach at Lincoln Way and Vicente outfalls. A new treatment plant is being proposed that would have a larger capacity. This Southwest Water Pollution Control Plant is planned to be south of the zoo.

The San Francisco Wastewater Program also includes proposals for transport/storage sewers on the west side of the City to temporarily store flows in excess of the new plant capacity and gradually release them as capacity becomes available. The West Side Project is proposed for under the Upper Great Highway south of Fulton. The Richmond Transport Project would link to the West Side Project and would serve the northwest portion of the City. If approved, construction of the Richmond Transport Project could affect design and/or construction of the proposed Ocean Beach Park Estates project. The status of both the West Side Transport and the Richmond Transport project was unresolved as of May 1979, pending review by the State Coastal Commission.

Solid waste service to the site is provided by Sunset Scavenger Corporation. Solid wastes are disposed of in a sanitary landfill in Mountain View. This landfill has a life expectancy of about 10 years (1987). The city is studying alternative disposal methods.

Three public schools serve the project area. Lafayette Elementary School at 4545 Anza Street takes children from kindergarten to fifth grade. The school had a May 1978 enrollment of 642 students. Presidio Middle School, 450 - 30th Avenue, serves grades 6 through 8. May 1978 enrollment was 1,038. George Washington High School, 600 - 32nd Avenue, serves grades nine through twelve. May 1978 enrollment was 2,231.

M. ECONOMICS

The land on which the proposed project would be constructed is currently vacant with no improvements. It is assessed for residential use currently at $1,006,000, and, as such generates property taxes to the City and County of San Francisco. The amount of property tax for the year 1978-1979 was $37,431.

No taxes were paid on the property from 1973-1977 and approximately $475,000 in delinquent taxes are being paid in installments over the next five years.[1]

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[1] City and County of San Francisco Tax Collector's Office, July 1978.

CHAPTER IV
IMPACTS

A. LAND USE

The proposed project would result in the development of one of the few large, vacant, residentially zoned sites remaining within the City.[1]

The project would also result in the long-term commitment to urban use in multiple private ownership of a site associated in the minds of many San Franciscans with the Playland-at-the-Beach amusement park. While the public would still enjoy access to, and use of, the commercial areas of the site, the situation would be different from the public-oriented recreational land use of the past.

In evaluating the land use impacts of the project, the plans of various Federal, State and local agencies must be considered, including:

1. Planning Code of the City and County of San Francisco
2. Coastal Commission guidelines
3. Local Coastal Plan of San Francisco
4. San Francisco Comprehensive Plan
5. San Francisco Subdivision Code
6. Land acquisition by GGNRA
7. Richmond Transport Project of San Francisco

1. Planning Code

The site is within C-1 (Neighborhood Shopping), RM-1 (Mixed Residential Low Density), and RH-2 (House, Two Family) districts. (See Figure 9, page 29.) The project sponsor has filed an application for 553 condominium units and 101 senior citizen rental units for a total of 654 units on the site. This density is greater than the 450 units which would be permitted if site development occurred on a lot-by-lot basis. However, if a conditional use for a PUD is approved, a greater number of units would be allowed, based on provisions of the Planning Code. The effect of the Planning Code is that the density limits of the RH-2 zone and of the project area as a whole are the two controlling factors for the maximum number of units allowed.[1] Preliminary calcualtions indicate that the total number of units proposed would exceed the maximum allowed in the PUD by 2 and the number of units in the RH-2 zone would exceed the maximum allowed by 50. Therefore, either the number of units in the project must be lowered and redistributed or the project sponsor must apply for a zoning change to allow the greater density.

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[1] Gary Craft, Comprehensive Planning Section, Department of City Planning, telephone conversation, 3 October 1978.

2. Coastal Commission Guidelines

The Interpretive Permit Guidelines[2] of the North Central Coast Regional Commission, a division of the California Coastal Commission, are relevant to the project. The recommended guidelines state:

> "Development of (the Playland at the Beach) site should be based on a master plan which incorporates coastal-related uses and facilities into the overall project.

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[1] Letter from Robert Passmore to T.K. Kutay, 17 April 1979.

[2] The Guidelines were adopted in 1978 by both the Regional and State Commissions. The quote is from subsequent additions adopted by the Regional Commission in March 1979. They represent standards by which the Coastal Commission would evaluate Coastal permit applications, such as for the proposed project. They are intended to be used until completion and certification of Local Coastal Programs in each California County.

> Such uses should include recreational and/or other visitor-serving facilities such as restaurants oriented to ocean views. Housing development may also be appropriate if significant opportunities are provided for low and moderate income households and if sufficient off-street parking is provided to accommodate residents and their guests . . .
>
> "A common coastal issue (in the Richmond/Sunset Districts) is the provision, where possible, of low and moderate income housing opportunities. Both single family and multi-family developments have been found consistent with this objective, resulting in an acceptable mix of housing types. Where development proposals consist of four units or more, the project should contain specific programs which assure the provision and maintenance of low and moderate income housing. Such programs might include a formal agreement with the local housing authority for the administration of the low/moderate unit(s) . . ."

These guidelines expand on the policies in the Coastal Act. The Coastal Commission would also address the question of the project's relationship to the applicable criteria of the California Coastal Act of 1976, i.e., the safeguarding of access to the coastline (Sections 20310, 30211, 30212, 30252 of the Act), providing recreational and housing opportunities (Sections 30213, 30221, 30222), protecting areas of special biological or economic significance (Section 30231), and providing new development in areas contiguous with established environ-mental goals such as minimization of energy consumption (Section 30252, 30253).

The proposed project would contain some commercial facilities, including restaurants, which would be available to the public. It also would contain recreational facilities available to recreational club members from within the development and from the Richmond, thus meeting the intent of the guideline to incorprate on-site coastal-related uses and facilities. Approximately 1,000 families are expected to be members of the club, about half of whom would be project residents and half would be from the surrounding community.[1] The only low and moderate income housing proposed are the senior citizen rental units on Parcel 1. The project may not entirely meet the guidelines requirement for significant opportunities for low and moderate income housing. (Further discussion on this matter is included in the comment concerning the Residence Element of the San Francisco Comprehensive Plan, pages 71-73). The uses proposed are consistent with the criteria of the Coastal Act.[2]

3. Local Coastal Program

Under provisions of the California Coastal Act of 1976, each local government with land lying in whole or in part within the Coastal Zone must prepare and submit a Local Coastal Program (LCP) for that portion of the Zone within its jurisdiction. This preparation includes identifying coastal conservation and development problems or issues, preparing a land use plan, the reviewing and approving of the plan by the California Coastal Commission, and preparing zoning regulations to carry out the land use plan, if necessary.

San Francisco has started the LCP process by producing a paper entitled "Issue Identification" dated April 1979, endorsed by the City Planning Commission on 26 April 1979 (Resolution No. 8243). After approval by the Board of Supervisors, the "issue identification" paper will be presented for approval to the North Central Coastal Commission and then to the California Coastal Commission. The Department of City Planning will begin the actual coastal planning process, projected to take about six months, after Coastal Commission approval. Following preparation of the Local Coastal Plan, approval by the Board of Supervisors and the Regional and State Coastal Commission will be necessary.

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[1] T.K. Kutay, telephone conversation, 29 May 1978.

[2] Steve Scholl, Staff Analyst, Coastal Commission, telephone conversation, 20 July 1978.

The Issue Identification paper notes:

> "The following issue is raised: How can any development proposed for this site fulfill Coastal Act goals, specifically those dealing with provision of low- and moderate-income housing, visitor-serving facilities, on-site recreational facilities, adequate parking, and the policy of the Act encouraging compatibility of new development with the character of surrounding areas?"[1]

4. San Francisco Comprehensive Plan

Many elements of the Comprehensive Plan contain objectives and policies that apply to the proposed project and are discussed elsewhere in this report. The Recreation and Open Space Plan is discussed in Section IV.C, page 81; Urban Design Plan in Section IV.D, page 86; and the Environmental Protection Plan in Section IV.G, page 93. Relevant elements are compiled in the "Draft Guidelines for Developments: Playland-at-the-Beach Site" prepared by City Planning Department staff and dated 5 August 1977 (hereafter called "Draft Guidelines"). The guidelines have not been finalized by the Department.

The Residence Element includes a number of policies relevant to the provision of housing on the site.

"New Residential Development

Policy 1 - In existing residential neighborhoods ensure that new housing relates well to the character and scale of surrounding buildings and does not reduce neighborhood livability.

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[1] City and County of San Francisco "Local Coastal Program for the City and County of San Francisco Pursuant to California Coastal Act 1976 - Issue Identification" April 1979.

"Policy 2 - Encourage the conversion of under-used non-residential land to residential use, and encourage multiple-residential development in conjunction with commercial uses in the downtown commercial area . . .

"Policy 4 - Encourage construction of a variety of unit types suited to the needs of households of all sizes.

"Policy 5 - Promote development of well-designed housing."

"Neighborhood Environment

"Policy 1 - Support housing with adequate public improvements, services and amenities.

"Policy 2 - Allow small-scale non-residential activities in residential areas where they contribute to neighborhod livability."

"Housing Opportunities

"Policy 2 - Encourage economic integration . . .

"Policy 4 - Expand opportunities for home ownership. The City should work for expanded opportunities for owner-occupancy of housing and develop special programs to facilitate home ownership for households of varied income levels . . .

"Policy 5 - Ensure the availability of quality rental housing.

"Policy 6 - Promote the availability of units suitable for persons with special housing needs and of varied lifestyles. Certain households with special needs have difficulty in finding suitable housing in San Francisco; these include the elderly, the handicapped, households with children and students."

"Housing Costs

"Policy 1 - Preserve and expand the supply of low and moderate income housing."[1]

The proposed project would add 553 one and two-bedroom units to the City's housing market, thereby expanding opportunities for home ownership. It would also include 101 senior citizen rental units, promoting the availability of "special needs" housing. The project sponsor has stated his intention to apply for a Section 8 HUD grant to subsidize the rental units.[2] If this grant were awarded, the project would promote the availability of units suitable for persons with special housing needs and encourage economic integration. It would also expand the supply of low- and moderate-income rental housing by 101 units.

With regard to ownership housing units, the sales prices of the condominium units are estimated to be approximately $52,000-$82,000 for the one-bedroom units, $89,700 for the two-bedroom units and $98,000-$112,000 for the two-bedroom/den units (all in 1978 dollars). The condominium portion of the project therefore would be unlikely to expand the supply of low and moderate income housing as specified in Policy 1, Housing Costs.[3]

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[1] City and County of San Francisco "The Comprehensive Plan: Residence Element" adopted by Resolution 7417 of City Planning Commission, 11 December 1975.

[2] These rent subsidies are not likely to be available for the next 2 years. Nat Taylor, Department of City Planning Housing Section, personal communications, 24 and 29 May 1979.

[3] "Low Income" is defined as households whose income does not exceed 80% of the median income for the San Francisco Standard Metropolitan Area as determined by the U.S. Department of Housing and Urban Development; "moderate income" households are those whose immediate income is greater than 80% but does not exceed 120% of median household income for the SMSA. Section 1309(e)(f) of Subdivision Code: Chapter XIII of Part II of San Francisco Municipal Code.

5. Subdivision Code

The provisions of the San Francisco Subdivision Code, which also contain mention of low and moderate income units, are applicable to the project. The purpose of the Code is to promote residential stability and diversity, an increase in owner-occupancy, the improvement of choice, quality and number of housing units, particularly for low and moderate income families.[1] Of particular relevance to the proposal is the requirement that "in projects of 50 or more units the subdivider shall make available ten percent (10%) of the units for low and moderate income occupancy provided that the City Planning Code finds that governmental subsidies for such occupancy are available to the subdivider."[2] In addition, "the sales program shall promote affirmative action in housing," and "adequate records shall be made available to the Director of the Human Rights Commission . . . in order to show that such affirmative action sales program is being carried out."[3] In terms of these requirements, it would be mandatory, should the subdivision be approved, for the project sponsor to provide affirmative action sales programs and, if subsidies are available, to provide at least 25 units of low and moderate income housing.

6. Land Acquisition by GGNRA

On 10 November 1978, President Carter signed the Omnibus Parks Bill (S. 91), sponsored by Phillip Burton (D-SF). The Bill included 1.9 acres of Parcel 4, and, if funding is later approved for the acquisition, some portion of Parcel 4 would become part of the GGNRA. Park authorities would then prepare proposals for its use. At present, there are no specific development criteria for the land. It appears, however, that its principal function is likely to be that of a visual buffer to Sutro Heights Park.[1] See the discussion of project alternatives in Section VII.C, page 157.

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[1] Section 1302, Subdivision Code; Chapter XIII of Part II of San Francisco Municipal Code.

[2] Ibid., Section 1341.

[3] Ibid., Section 1342.

7. Richmond Transport Sewer Plan

An element of the City's Wastewater Management Plan involves construction of a transport sewer line from the Richmond District to connect with the northern end of the West Side Transport sewer. As of May 1978, the preferred route of the transport would be from its connection to the West Side Tansport at the intersection of Fulton Street and the Great Highway, north along the Great Highway, and then through a tunnel under Sutro Heights Park, Lincoln Park, Seacliff, and coming out of ground at the Presidio.[2] There would probably be open-cut construction along the Great Highway. A 15-foot tunnel portal is proposed beneath Sutro Heights Park on Parcel 4. A staging area for construction activity would be located on Parcel 4 or on a portion of the Great Highway. Other alignments are still under consideration and will be described in a later EIR.

If the currently preferred alignment is not chosen, construction would still occur along the Great Highway from Fulton to Sutro Heights to replace inadequate sewers and provide a connection to the West Side Transport project. The current construction schedule proposes start of construction in February 1981 and extending over 29 months until July 1983.

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[1] Doug Nadeau, GGNRA, telephone conversation, 18 July 1978.

[2] Dan Champeau, Bureau of Sanitary Engineering, City of San Francisco, personal communication, 3 May 1979.

The Richmond Transport Project could potentially conflict with the proposed land uses on Parcel 4 for the Ocean Beach Park Estate project. There could also be cumulative construction impacts if the projects were to be constructed with simultaneous or overlapping schedules. Insufficient information is available at this time to predict impacts readily. However, delivery of construction materials to the sewer construction site at the same time that materials were being delivered to the Ocean Beach Park Estates site would add to the traffic and noise predicted along the delivery routes. Construction-caused noise and dust could increase if both projects were built at the same time. If more of the area were under construction at one time due to simultaneous implementation, visual effects would be more widespread than for either project alone. These and other construction-related effects would be temporary and would not continue beyond the construction period. If construction of the Richmond Transport and Ocean Beach Park Estates were to occur sequentially rather than simultaneously, cumulative effects would not occur, but construction impacts in the area would occur for a longer period of time. Mitigation measures to reduce impacts of sewer construction have not yet been developed.

A public works permit must first be obtained from the State Coastal Commission approving the conceptual framework of all sewage facilities proposed in the west side of the City. An EIR for the Richmond Transport is currently in preparation and is scheduled for certification by January 1980. Following certification, final approval must still be obtained from the Coastal Commission and from the National Park Service if a portion of the GGNRA would be affected.

A final decision on the feasibility of the Richmond Transport and its alignment depends on the outcome of the EIR and permitting process. The Richmond Transport EIR will address the cumulative impacts in greater detail than is possible in this report.

B. COMMUNITY CHARACTERISTICS

Based on an estimate of 2.1 persons per condominium unit and 1.3 persons per senior citizen unit, the proposed project would bring approximately 1,300 new residents to the western Richmond district. It is not anticipated that the addition of the proposed project would statistically change the demographic characteristics of the community. However, the density on the project site would be greater than in surrounding blocks, where the majority of the lots are zoned for two-family dwellings.

C. RECREATION AND OPEN SPACE

As noted in Section IV.D., Visual Quality (page 84), the project would preclude use of the site as open space parkland physically linking the western portion of Golden Gate Park to Sutro Heights Park, a portion of the Golden Gate National Recreation Area (GGNRA). However, the project would provide both public and private open space and recreational facilities.

The Recreation and Open Space Plan,[1] an Element of the San Francisco Master Plan, states the following policies applicable to this project:

> "Policy 1 - 'Require all new development within the shoreline zone to conform with shoreline land use provisions, to incorporate open space, to improve access to the water and to meet urban design guidelines.'

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[1] San Francisco Department of City Planning, adopted by Resolution 7021 of the San Francisco City Planning Commission, 24 May 1973.

> "All new shoreline developments, except low density residential ones, should provide and maintain on their sites ground level open space, well situated for public access and designed for maximum physical and visual contact with the water.
>
> " . . . The types of open space provided in new developments will depend upon the nature of the sites; however, as much as feasible they should meet the recreational needs of adjacent neighborhoods, especially those deficient in recreation space, and add to the variety of recreational facilities along the entire shoreline.
>
> "In urban design terms, new developments should make maximum use of their shoreline locations and complement the shoreline as San Francisco's most important natural resource. More specifically, new developments should:
>
> "Maximize public access to the water, both visual and physical.
>
> "Give careful consideration to environmental factors to make shoreline open spaces more pleasant and usable, particularly in windy areas."
>
> "Policy 2 - Improve the quality of existing shoreline recreation areas.
>
> "Access to some areas, such as Ocean Beach, is hindered by heavy, fast-moving traffic. Better trails and stairway to the water are needed along the headlands . . .
>
> "Simple public improvements such as effective signs, well-marked trails, safety features, landscaping for windbreaks, and diversion of traffic can promote greater use of these shoreline areas. Good maintenance is also required . . .

At the present time, a well-defined pedestrian linkage between the Richmond District and Ocean Beach does not exist. The width of the Great Highway remains an obstacle to the pedestrian when access to the beach is desired. The proposed project does not address this issue directly; Great Highway road improvements would be the responsibility of San Francisco. The project would encourage pedestrian access to and from the shoreline, however, due to the closure of Cabrillo Street at its juncture with the Great Highway and the creation of a landscaped area with kiosks between Parcels 2 and 3. Increased pedestrian activity in this area would require off-site street improvements to ensure pedestrian safety at the Great Highway (see page 137).

Because of street tree plantings and textured surface paving, north-south pedestrian linkage would be visually apparent along La Playa between Golden Gate Park and Balboa Street. Visual definition of pedestrian access would be partially offset, however, due to street paving and vehicular traffic between Fulton and Cabrillo Streets. Pedestrian access to Sutro Heights Park along the east margin of Parcel 4 is not included as a part of the proposed project, even though the Design Guidelines in the 1977 Draft Guidelines indicate that such access would be appropriate as part of the project. Park access may be provided in the future by the National Park Service as part of the GGNRA. Stairways would probably be required on the steep slopes leading up to the park.

Various recreational facilities, including a tennis court, racquetball courts, and a swimming pool, would occupy 28,000 gross sq. ft. of the project. This space would be available to recreational club members from within the development and from the Richmond District area. About 500 family memberships are expected to be available to District residents. For those nonresidents who join the club the availability of facilities for tennis and swimming would be better than present conditions.

The public open space incorporated in the project would be in the area between Parcels 2 and 3 and on La Playa Street between Balboa and Cabrillo. While these spaces are currently open to the public as city-owned streets, the project would change them to pedestrian-oriented, landscaped open space areas.

D. VISUAL QUALITY

The visual characteristics of the proposed project would be derived from its physical layout; the size, shape, and height of the buildings that would comprise the project; the construction materials used; and landscape development.

Because the project area is open to view from the Great Highway and southern edge of Sutro Heights Park, the proposed project would be an important element in defining the visual character of the western end of the Richmond District. Areas of concern relative to visual impact include the architectural compatibility of the proposed sturctures with existing buildings and open space uses surrounding the project area, the potential for blocking views of the beach and ocean from residences to the east of the project, rooftop design with respect to views from higher elevations in nearby areas, and project night lighting.

1. Architectural Compatibility

Policies 1 and 5 for New Residential Development in the Residential Element of the Comprehensive Plan contain statements relating to the architectural compatibility of the project (see pages 74 and 75).

As a result of the proposed project, new buildings would replace a 3-½-block area of vacant land. Visually, the effect this would achieve would be the completion of the residential development already existing in the neighborhood.

Construction would be wood frame, similar to most other residential units in the vicinity of the project site, above a concrete parking structure which would extend four feet above street level fronting on the Great Highway and would be mostly below grade at other locations. Stucco, a hand-trowelled cement finish, is currently being considered for application to exterior building walls. Colors would be light but the exact color has not been determined. Heavy timber construction would probably be used for internal bridges and stairways connecting the units.

The proposed project would differ in its structural configuration from other buildings surrounding the project area because of the way that dwelling units are proposed to be grouped in order to provide view corridors through the site (see Figure 4, page 13). The groups of dwellings would visually assume a larger scale than the individual two-story buildings on 48th Avenue (which give the effect of row-housing) but would be at a similar scale to the three- and four-story apartment buildings on Balboa and Cabrillo Streets between 48th Avenue and La Playa Street.

The buildings would be wider fronting on La Playa Street than on the Great Highway to allow better views for more of the units. The facades of the buildings would include an offset pattern of building walls, with the height of the building stepping down to three and two stories on the Great Highway side.

Some windows would project outward from stepped-in walls on the upper floors (modified bay windows) while others would be set flush with portions of exterior building walls (see Figure 8, page 20). The architectural style generated by the proposed method of window placement would give the project a visual identity unique within the Richmond District, not entirely complying with New Residential Development Policy 1 in the Residence Element of the Comprehensive Plan, or with the Design Guidelines in the 1977 Draft Guidelines.

Because of the 40-foot height limitation, roofs would typically be flat, though sloping surfaces would be introduced where feasible. A few elements would exceed the 40-foot height limitation; these include elevator shafts, stairs required to extend to the roof, chimneys and some parapet walls at the edges of the roof. These features are permitted to be above the height limit according to the Planning Code.

As shown in Figure 6, page 17, Parcel 1 would contain residential units and commercial and recreational facilities. Commercial spaces would face west toward a pedestrian and transit area surfaced with special paving which may be textured concrete, exposed aggregate concrete pavers or brick. This paving would extend south to the MUNI bus turnaround and connect to the pedestrian access situated between Parcels 2 and 3 at the end of Cabrillo Street. The special surface paving proposed would be unique to the project area and serve to emphasize the visual identify of the project site.

2. Views

The Urban Design Plan of the Master Plan includes the following policy related to views:

Policies for City Pattern

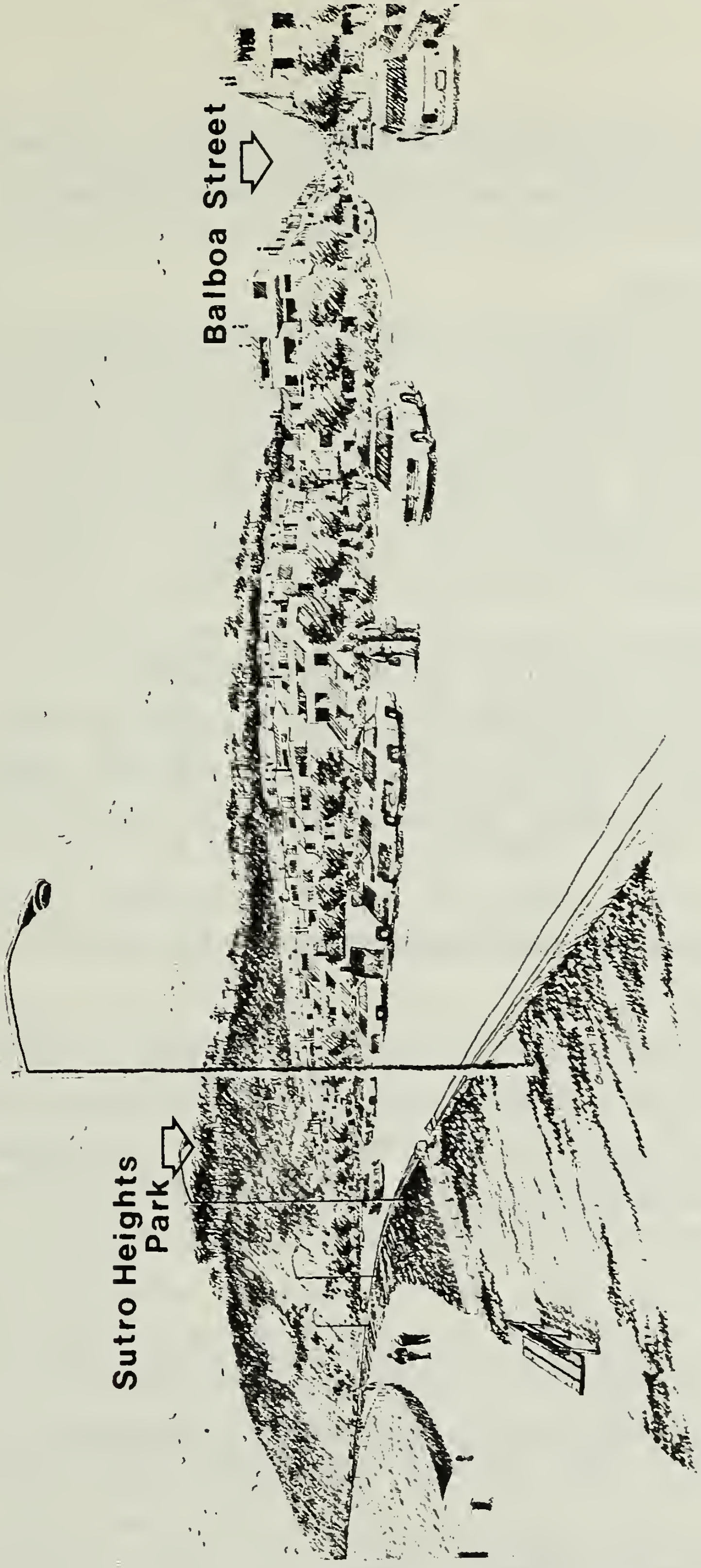
"Policy 1 - 'Recognize and protect major views in the City, with particular attention to those of open space and water'

" . . . overlooks and other viewpoints for appreciation of the City and its environs should be protected and other obstructions . . .

"Visibility of open space, especially those on hilltops, should be maintained and improved . . ."

The proposed buildings would vary in height up to 40 feet. The structure on Parcel 1 would be 40 feet high except for portions of the recreation area above the MUNI bus turnaround. Correspondingly, views toward the ocean from the backs of existing residences adjacent to Parcel 1 would be obstructed.

Residences and apartments on higher terrain east of Parcel 4 would take in views of project area rooftops. Structures would be constructed on the lower slopes of Parcel 4, obstructing views north toward the steep terrain that defines Sutro Heights Park. Figure 20 shows a perspective sketch of



Perspective Sketch, Parcel 4, Full Development

Figure No. 20

Parcel 4 with the full development proposal, as seen from the sidewalk on the western edge of the Great Highway.

3. Night Lighting

Exterior night lighting would be provided for circulation, safety and security. The intensity and location of light sources has not been specified by the project sponsor; however, the inent would be to keep light levels low and subtle to avoid point sources of light which would interfere with views and motorists' vision at night. Lighting provided for the outdoor tennis court located above the MUNI turnaround would be visible from the surrounding Area.

Building interiors would be visible at night from the Great Highway and adjacent areas when interior lighting is turned on unless shades or curtains were drawn over windows.

E. TOPOGRAPHY, GEOLOGY, AND SEISMICITY

Implementation of the proposed project would change the topography on Parcels 2 and 3 by filling in the deep excavation pits. The proposed buildings would stand on level ground at elevation of about 28 feet City Datum. Development of Parcel 4 would entail some grading to accommodate the structures proposed.

Parcels 1, 2, and 3 would not pose geological hazards to the proposed project, as the parcels would be leveled and the soils are compatible with the type of construction proposed. On Parcel 4, grading would take place on the lower portions of the cliffs, leaving a buffer zone of approximately 40 feet untouched between the proposed development and the northern property line toward Sutro Heights. This could prevent slumping beyond the project property line.

When excavations are made in almost any kind of soil, the potential for soil erosion increases. Parcel 4 has erosion in its natural state, as evidenced by gullying and slumping.

When disrupting the fragile natural equilibrium by changing slopes and excavating downslope material, thereby increasing the slope gradient, the hillside will respond with increased erosion.

Cuts would be made both in the dune sand and the Colma Formation. The angle of repose[1] for the sand varies from 22° to 26° and the Colma Formation has an angle of repose of about 30- 33°. Any cuts exceeding these angles of repose, either during construction or following implementation of the project, would cause further downslope movement or failing of the hillsides.

The project site, like other areas of San Francisco, lies in an area subject to potential earthquake-induced groundshaking, causing stress to structures both above and below ground. The water table in the project site is between 10 and 20 feet[2] below the surface topography. This means that some of the dune sand and part of the Colma Formation is saturated with water, which could cause liquefaction in the event of an earthquake.

Recurrence intervals for a maximum earthquake of 8.25 on the Richter scale along the San Andreas Fault are estimated between 100 and 1,000 years[3]; a seismic event could therefore occur within the lifetime of the proposed project. The project site has been mapped according to estimated intensity of groundshaking in the San Francisco Seismic Safety Investigation.[1] (See Figure 21, page 91). The project site lies within zones B and C, indicating that in the event of an earthquake, the intensity of shaking would be "very strong" to "violent."

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[1] The critical angle above which a slope fails.

[2] Lee and Praszker, Consulting Civil Engineers, Report on Soil & Foundation Investigation, Seal Rock Development, 6 December 1972.

[3] Greensfelder, R.W., Maximum Credible Rock Acceleration from Earthquakes in California, California Division of Mines and Geology, Map Sheet 23, 1974.

Tsunami-induced flooding would not affect the proposed project, as the site elevation is approximately 28 feet City Datum, and the predicted run-up for the 500-year tsunami is about 11.4 feet.

F. HYDROLOGY AND WATER QUALITY

The major hydrological impact of the proposed project would be an increase in the quantity of surface runoff during storms and a worsening of the quality of this water. Urban runoff contains contaminants in the form of suspended solids, nutrients, heavy metals, pesticides, and bacteria; these result from runoff from open areas, deposited vehicle emissions, street surface material, leaf-fall, litter, spills, animal droppings, and atmospheric fallout.

The quantity of stormwater runoff requiring drainage depends on the magnitude of a given rainstorm and the characteristics of the land surface. Increasing the amount of impervious surface area (streets, buildings, plaza, etc.) increases the amount of runoff requiring drainage by decreasing the amount of water that can percolate through to the groundwater table.

Under existing conditions, most of the site consists of pervious surfaces. The proposed project would result in approximately 93% of the site being covered by impermeable surface area (buildings, roads, parking areas, sidewalks, etc). The remaining 7% would include the areas around trees and the

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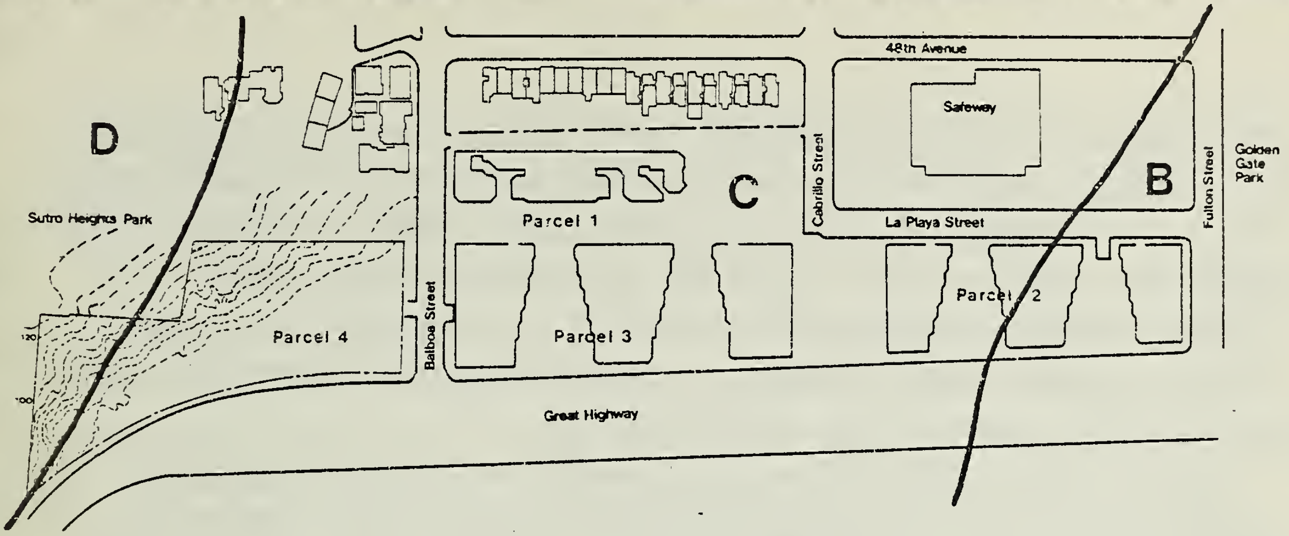
[1] URS/John A. Blume & Associates, San Francisco Seismic Safety Investigation, June 1974.



A Very Violent. Cracking and shearing of rock masses. Deep and extended fissuring in soil, many large landslides and rockfalls.

B Violent. Fairly general collapse of brick and frame structures when not unusually strong. Serious cracking of better buildings. Lateral displacement of streets, bending of rails and ground fissuring.

C Very Strong. Masonry badly cracked with occasional collapse. Frame buildings lurched when on weak underpinning with occasional collapse.

D Strong. General but not universal fall of brick chimneys. Cracks in masonry and brick work.

E Weak. Occasional fall of brick chimneys and plaster.

NOTE: Intensities are given for earthquakes similar to the 1906 event in magnitude and proximity to San Francisco.

Estimated Intensity of Future Ground Shaking

Source: San Francisco Seismic Safety Investigation, John A. Blume & Associates, June, 1974

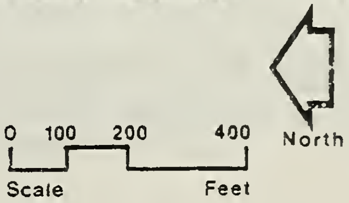


Figure No. 21

landscaped areas on the northern and eastern part of Parcel 4. The increase in impervious area would increase the annual surface runoff from the site by slightly more than two-fold during an annual storm event. Although detailed drainage plans have not been developed for the project, it is probable that the surface runoff from the site would be discharged directly into the combined sewer-storm drain system.

During construction of foundations for the proposed buildings and the underground garages, excavations below the groundwater table could locally alter the groundwater flow. At the conclusion of construction, there could be groundwater buildup behind foundations on the eastern side of the project creating a damming effect; this could happen on Parcels 2 and 3 in the flat-lying areas of the project site. The dammed water could increase pressures on foundations, and could result in surface ponding in extreme cases. On Parcel 4, buildings would be built on the slopes with a retaining wall upslope. The retaining wall could act as a groundwater barrier that would dam the water between itself and the hill slope.

G. VEGETATION AND WILDLIFE

Limited vegetation and wildlife can now be found on Parcels 1, 2, and 3. Construction of the proposed project would eliminate existing vegetation and associated wildlife habitat on these parcels. Elimination of wildlife habitat would primarily affect scavenging birds (gulls and pigeons) and animals (rats) that frequent the site.

Construction of the proposed project on Parcel 4 would eliminate the sparse vegetation and wildlife habitat found on the flat portion of the site and would eliminate some vegetation in scattered locations on the bluff face. Figure 16, page 51, gives an indication of the extent of the direct loss of the dune tansy on the bluff face. The direct loss of the dune tansy is contrary to the City of San Francisco's Environmental Protection Element Policy #3 (Policy for Flora and Fauna), which states "Protect rare and endangered species."

If construction around the bluff face follows recommended procedures discussed in Section V.E, Topography, Geology and Seismicity, and recommendations contained in the geotechnical report for the project site, potential erosion would be minimized at the upper portions of the dune bluff near the dune meadow. However, due to the highly erodible nature of the bluff face, mishaps or human error during construction around the bluff could accelerate erosion that in time could affect the dune meadow. If erosion were severe and were not stopped, the dune tansy population and other vegetation in the dune meadow could be reduced.

The proposed project would increase the amount of human activity in the project area. Greater use of the trail system to the east of Parcel 4 through the dune meadow between Balboa Street and Sutro Heights Park could be expected. The trail is used extensively now for sightseeing, hiking and dog walking. Although the proposed buildings would block some access to the bluff face, this area is relatively steep and therefore used less than the trail system east of the parcel. Increases in the use of the trail system through the dune meadow would accelerate the amount of trampling in this area, and could be detrimental to the dune tansy population and other plants.[1]

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[1] Based on conversations with Nancy Stone, Park Technician, and David Rung, Supervising Park Technician, U.S. National Park Service, personal communication, 17 November 1978.

H. CULTURAL RESOURCES

As no historical or archaeological reserves are known to exist on the proposed project site, no impacts on cultural resources are anticipated.

I. TRANSPORTATION

1. Relationship to Existing Plans

Fulton Street is designated as a major thoroughfare and a transit preferential street in the Transportation Element of the San Francisco Comprehensive Plan. The Plan further designates the current path of the 18 Sloat bus service in the vicinity of the proposed project as a major crosstown bus route. Cabrillo Street and the Great Highway south of Cabrillo, along with 46th Avenue between Cabrillo and Sutro Heights Avenue, are designated bicycle route.

The proposed project would involve closing La Playa Street between Balboa and Cabrillo to automobile traffic; service and emergency vehicles and buses would continue to use the street. No changes to the designated major crosstown bus route passing through the site (currently the 18 Sloat) would be necessary.

The future of the Great Highway is uncertain at this time. Redesign plans are currently under review for the segment south of Fulton Street (in conjunction with the West Side Transport/Storage element of the San Francisco Wastewater Master Plan[1]). Conceptual redesign plans for the Great Highway north of Fulton Street[1] (adjacent to the proposed project) were prepared by Michael Painter for the San Francisco Wastewater Program. It is unlikely that the Wastewater Program will implement any design changes to the Great Highway north of Fulton. The design of the Great Highway has also been identified as a key issue in the Local Coastal Program and will be evaluated for possible design changes.

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[1] Final EIR, West Side Transport/Storage Project, San Francisco Wastewater Master Plan Implementation Project IX. EE 75.304, City and County of San Francisco, July 1977.

In the absence of final redesign plans for the Great Highway, either adjacent to the proposed project site or to the south, it has been assumed for the purposes of this traffic impact analysis that the Great Highway will remain unchanged.

Current MUNI plans for transit service in the area are based on the MUNI Five-Year Plan[2]. The plan calls for a general consolidation of bus service in the Richmond area. In the vicinity of the project site, route paths would remain unchanged. The 5 Fulton would remain unchanged except in the downtown where service would be extended to the TransBay Terminal. The current 18 Sloat will become the 18-46th Avenue. The new line will provide north-south crosstown service connecting the Presidio with the Legion of Honor, Ocean Beach, Zoo, and Stonestown. It will replace the Presidio segment of the 28-19th Avenue, and the present 70-Lake Merced. Service between 46th Avenue and Stonestown will be retained. Service frequency throughout the day will be roughly comparable to existing levels.

The 38 Geary will be relocated west of 33rd Avenue from Balboa to Geary Boulevard and Point Lobos. It will be replaced by the 31 Balboa, which will be retained along its present route and extended westwards from its current terminus at 33rd Avenue, along Balboa, 45th Avenue, and Cabrillo to the project site over the outer section of the present Route 38 Geary. A new line, the Route 31X-Balboa Express, will provide peak-hour-only motor coach service to the beach terminus. Midday frequency for the Route 31 will be about nine minutes, reducing to about four minutes during the peak periods with the express service.

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[1] Redesign Plan for the Great Highway, Michael Painter & Associates, and Tudor Engineering Company, for San Francisco Wastewater Management, 1977.

[2] San Francisco Municipal Railway, Five-Year Plan: 1979-1984.

None of the bus routes in the project area are scheduled to operate articulated vehicles during the period of the 5-Year-Plan. The proposed project would consolidate the terminal facilities of these bus services into one bus turnaround at Cabrillo and La Playa. This is discussed in more detail in Section IV.I.5, page 104.

2, Construction Impacts

The construction of the project would be staged over a 4-year period. As the site is currently vacant, access could be gained from all sides. Trucks would be limited primarily to access routes on Fulton Street, Point Lobos Avenue and the Great Highway to avoid impacting the principally residential streets of Balboa and Cabrillo. As Fulton Street is a transit preferential street, construction truck traffic could conflict with Route 5 bus operation. No details or reliable estimates are available on the number of construction vehicles that would be used or the frequency of visits to the site.

As Parcels 1 and 2 and the space between Parcels 2 and 3 would be constructed before Parcel 3, access during the later construction of Parcel 3 would have to be from Balboa or the Great Highway to avoid conflicts with the new pedestrian areas and relocated MUNI turnaround. Access during construction of Parcel 4 would also be from the Great Highway or Balboa Street.

3. Project Traffic Generation and Distribution

The traffic levels that would be generated by the proposed project would be influenced by various factors, including the land-use mix of the development, its geographic location and the level of transit service in the vicinity of the project. Appendix A contains full details of the trip-generation estimation process, including assumptions as to the level of internal project trips and usage of the different transportation modes available in the area. Table A-2 in Appendix A summarizes the estimated number of trips that would be generated by the project.

It is estimated that the proposed project would generate an additional 9,025 average daily motorized one-way person-trips in the area, of which 1,410 trips, about 16% would be made by transit. An estimated 5,200 average daily one-way automobile vehicle trips would be generated by the project.

During the morning peak hour (from about 7:30 to 8:30 a.m.), 165 transit trips and 275 vehicle trips would be generated by the project. Traffic generated during the evening peak (5 to 6 p.m.) would be higher due to the higher evening peaking characteristics of all the proposed project land uses. An estimated 235 transit trips and 560 vehicle trips would be generated by the project during the evening peak hour. Table 3 and pages 190-194 in Appendix A describe the estimated project traffic generation by development parcel.

4. Impact on Road Network

The design year selected for the traffic impact analysis is 1985. No traffic projections are currently available for the streets that wold be affected by the proposed project, so growth rates without the project have been assumed at 1%

per year[1] for all roads in the area of the project. It has been assumed that peak-hour traffic will grow proportionately to the average daily traffic.

The assumed distribution of project-generated traffic, detailed in Appendix A (page 194), was based on the 1970 census work-trip distributions reported for the West Richmond Area, on major trip generators/attracters in the San Francisco region, and on the existing traffic distribution over the road network.

The estimated traffic levels without the project and the estimated increases in traffic due to the project are shown in Figures 22 and 23 for average daily traffic (ADT) and peak-hour conditions respectively. Table 4, Appendix A, summarizes these estimated for the principal access roads to the proposed project site. It should be noted that the estimated future traffic levels both with and without the project assume the left-turn turn prohibition from Balboa Street westbound to 48th Avenue south-bound adopted in July 1978.[2]

The highest absolute increases in traffic would occur on Balboa Street between the Great Highway and 47th Avenue. During the evening peak hour, traffic on Balboa between the Great Highway and La Playa would be increased about 80% from 225 vehicles without the project to 400 vehicles with the project. The level of service[3] on Balboa Street at the Great Highway

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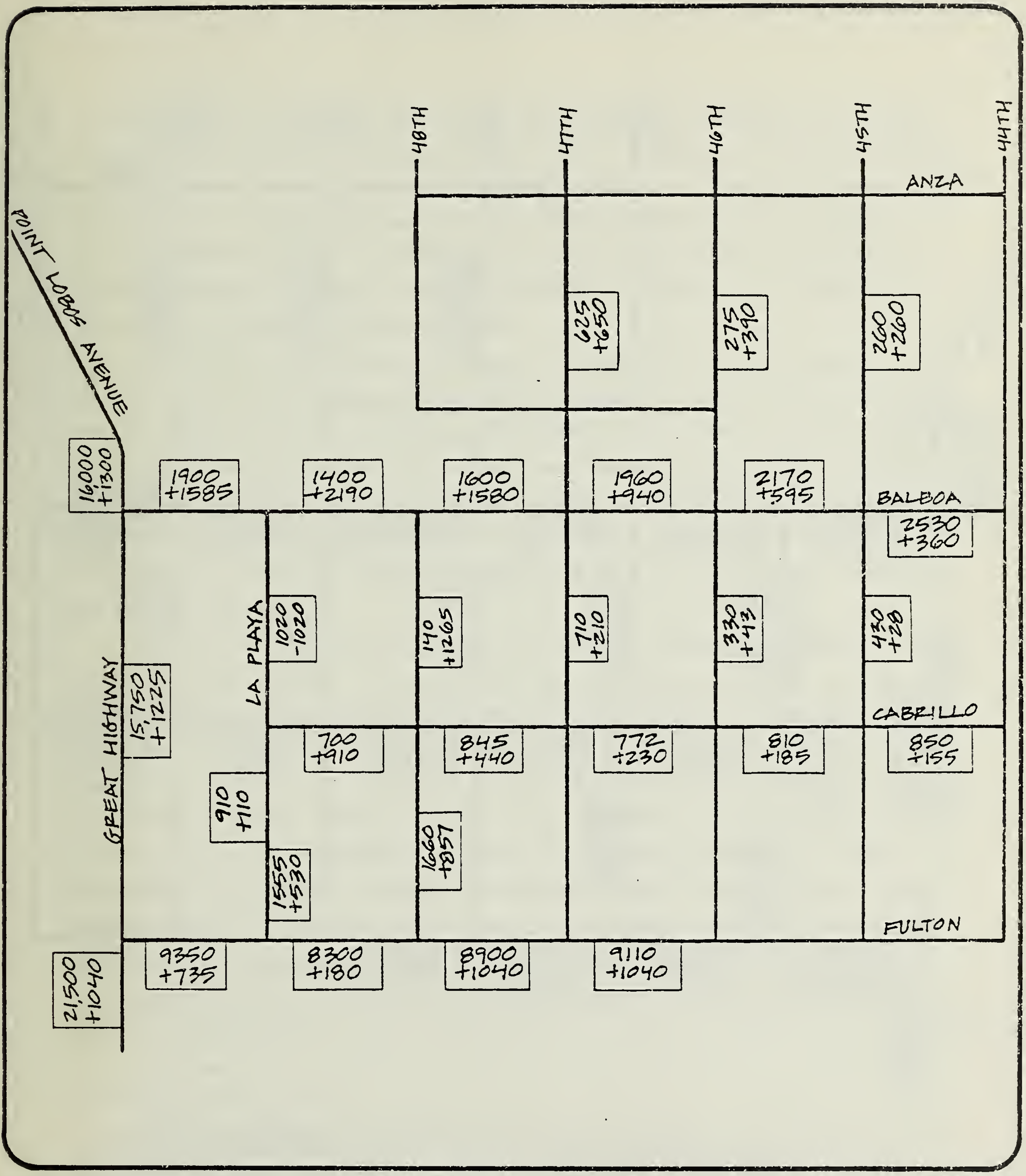
[1] Developed in Discussion with Scott Shoaff, Associate Traffic Engineer, San Francisco Department of Public Works, July 1978.

[2] This left-turn prohibition was implemented due to the poor sight line of westbound vehicles on Balboa. Between 1974 and 1977 eight traffic accidents were recorded at this intersection, of which three involved left-turning vehicles from Balboa westbound (Gilbert Sarns, Traffic Engineer, San Francisco Department of Public Works, telephone conversation, 2 May 1979.

[3] See Appendix A, page   for definition of levels of service.



Future Traffic Conditions–ADT

North

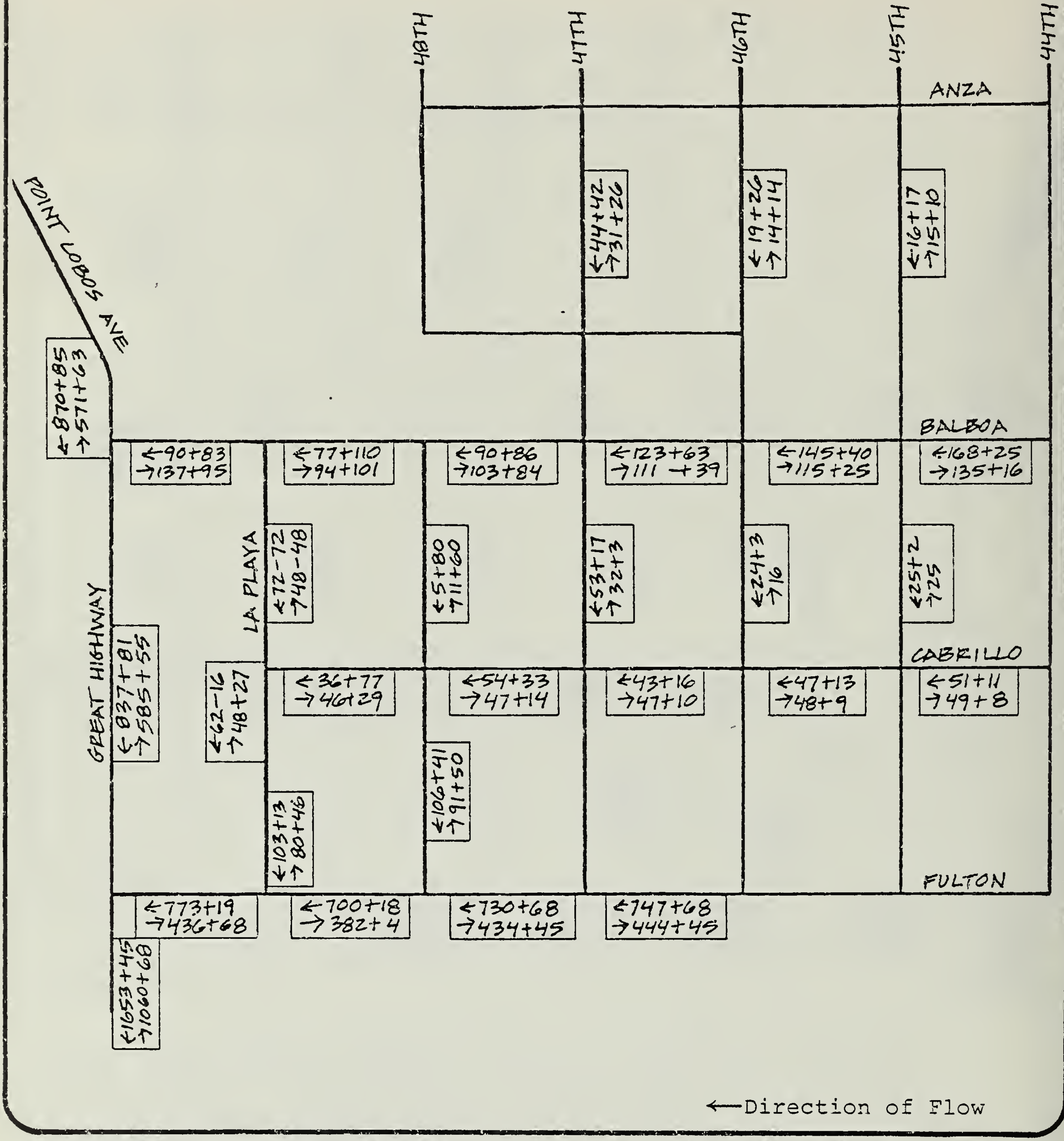
KEY

WITHOUT PROJECT 8900

INCREASE DUE TO PROJECT +1040

Not to scale

Figure No. 22



Future Traffic Conditions PM Peak

North

KEY

WITHOUT PROJECT ←730
INCREASE DUE TO PROJECT +68
DIRECTION OF FLOW →

Not to scale

Figure No. 23

is expected to remain A with or without the project. To the east of 48th Avenue evening peak-hour vehicles on Balboa would be increased from about 195 to 365 with the project. The traffic increases on these sections of the street would be largely due to the fact that the only garage entrances to Parcels 3 and 4, and one of the garage entrances to Parcel 1 would be on this section of Balboa Street.

While the analysis assumes that left turns would be prohibited from Balboa westbound to 48th Avenue, the project would result in an increase of traffic flow through this intersection from about 200 vehicles per hour to about 460 vehicles per hour during the peak period. The potential for vehicular conflict would then be increased, considering the poor vision afforded drivers at the intersection due to the steep gradient of Balboa Street.

Evening peak-hour traffic on 48th Avenue between Balboa and Cabrillo would increase from 16 vehicles without the project to 156 vehicles with the project.[1] This traffic volume would thus be similar to the existing volumes on 48th Avenue between Cabrillo and Fulton Streets and on Balboa Street between La Playa and 48th Avenue. About 50% of the traffic increase would be attributable to existing traffic being diverted due to the closure of La Playa Street. South of Cabrillo, evening peak-hour traffic on 48th Avenue would increase from 197 vehicles without the project to 288 vehicles with the project. The estimated level of service on 48th Avenue at Fulton Street would change from A to C. Level of service C refers to a situation where most drivers are restricted in their freedom to select speeds, but where relatively satisfactory operating speeds are obtained, with service volumes perhaps suitable for urban design practice.

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[1] This assumes a worst-case distribution of project traffic taking the most direct route to major thoroughfares such as Fulton, and non-project traffic diverted by the closure of La Playa Street being principally relocated to 48th Avenue. If drivers were to choose routes involving other streets, the impact of the project on 48th Avenue would be reduced and the impacts diffused over other north-south routes.

Part of the traffic impact in the area would be due not to traffic generated by the project, but to the redistribution of existing traffic by the proposed closure of La Playa Street between Balboa and Cabrillo Street to all private automobile traffic. This street closure is proposed by the project sponsor as an integral part of the project. As proposed, the street would be landscaped to provide a pedestrian area between the proposed commercial facilities on Parcel 1 and the condominiums on Parcel 3. The Route 18 crosstown bus service would be permitted through the street, thus mainaining its existing route. Emergency and service vehicles would also have access to the pedestrian area. Private automobile traffic would be excluded through the use of "No Entry" signs at Balboa and Cabrillo.

The estimated redistribution of traffic due to the closure of La Playa Street is discussed in Appendix A, page 196, with a brief summary here. The impacts would range from an additional 640 vehicles a day on 48th Avenue (the parallel street) to about 200-250 on other adjacent streets, such as Fulton, Great Highway and Balboa. The closure of La Playa Street would account for about 50% of the total additional traffic estimated to use 48th Avenue as a result of the project. Corresponding percentages on other streets range from about 10% on Balboa to 20% on Cabrillo west of 48th Avenue and on the Great Highway, and over 30% on Fulton at the Great Highway.

The ADT on Point Lobos Avenue would be increased by about 8% or 1,300 vehicles (from 16,000 vehicles without the project). South of Fulton, ADT on the Great Highway at 21,500 daily vehicles without the project would be increased by 1,040 vehicles a day, or about 5%. During the evening peak hour, about 150 vehicles would be added to Point Lobos Avenue, and 115 vehicles added to the Great Highway south of Fulton. Evening peak-hour traffic on these roads without the project would be about 1,450 vehicles and 2,700 vehicles, respectively.

Evening peak-hour traffic on Fulton Street between the Great Highway and La Playa Street would increase from 1,210 vehicles to 1,300 vehicles. Traffic on the Great Highway between Fulton and Balboa Streets would increase from 1,400 vehicles to 1,560 vehicles with the project. The level of service would remain C at the Great Highway/Fulton Street intersection, with or without the project.

Sunday traffic without the project would be about 80% higher during the peak-hour (about 3 - 4 p.m.) on the Great Highway than weekday peak traffic levels; on Fulton Street about 20% higher.[1] Project-generated traffic would be about 75% lower during a Sunday peak-hour than during a weekday peak-hour. It is estimated that on a Sunday, peak-hour traffic would be increased by about 5% on the Great Highway and on Fulton Street due to the project. No traffic data were available to estimate Sunday traffic volumes without the project on the local distributor roads in the immediate vicinity of the project site. As project trip generation levels would be lower on a Sunday than during the week, it may be expected that the traffic impact on these local roads would be correspondingly lower.

Emergency and Service/Delivery Access. Emergeney vehicle access to Parcels 1, 2, and 3 would be via La Playa Street, and to Parcel 4 via the Great Highway. Service and delivery vehicles would gain access to Parcel 1 via a separated access 12 feet wide on the east side of the proposed bus turnaround facility at La Playa and Cabrillo. This access would be one way north. A 10-foot service lane, one-way southbound would be provided on La Playa between Balboa and Cabrillo to allow service vehicles access to Parcel 3 without having to use the Great Highway.

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[1] See Transportation Setting, Section III.I.2, page 55 .

5. Impact on Transit

The transit impacts analysis assumes that the MUNI service changes in the project area outlined in the Five-Year-Plan would be in operation when the project was constructed.

Proposed New Turnaround Facility. The proposed project would consolidate the existing MUNI turnaround facilities at Cabrillo and Balboa and at Cabrillo by the Great Highway into one new facility at the southern end of Parcel 1. This new turnaround would serve both the 5 Fulton and 31 Balboa routes, and would operate with a one-way circulation system. Buses would enter from Cabrillo Street midblock, and exit onto La Playa Street at Cabrillo. Route 5 would thus terminate at Cabrillo rather than Balboa, and Route 31 would terminate on the east side of Cabrillo rather than at the Great Highway. Pedestrian access to the Great Highway and the beach beyond would be maintained via pedestrian area on the location of the existing MUNI turnaround at the end of Cabrillo.

The proposed turnaround would represent an improvement in transit facilities in the area through the consolidation of the two existing termini, now a block apart, into one facility. The passenger waiting area would be sheltered by the roof of the turnaround and benches would be provided.

The 18-46th Avenue (presently called 18 Sloat) would not use the proposed turnaround and its route would remain unchanged by the project as the service would continue to use La Playa between Cabrillo and Balboa. The project plans indicate Route 18 bus stops would be provided on La Playa at the sourthern entrance to the pedestrian area just beyond Cabrillo (for northbound service) and by a bus pullout opposite Cabrillo (for southbound service). Enclosed waiting areas are not proposed for these stops.

At the eastern side of the turnaround, a raised curb would separate the bus area from a single lane access road to the garage and loading bay of Parcel 1. This access road would be for inbound traffic only, in order to prevent conflicts between vehicular access to the Parcel 1 garage and buses entering the turnaround. It is estimated that the average arrival rate of buses and cars to these access points during the evening peak hour would be a maximum of 1 bus/minute and 2 cars/minute respectively. These arrival rates could be adequately handled by the access points.

Impact of Transit Trips Generated by the Project. As detailed in Appendix A, page 189, the lack of precise transit modal split data[1] for the Richmond area, and for the project specifically, introduces an element of uncertainty into the transit trip forecasts for the project. A range of projected transit ridership was thus adopted for the transit impact analysis. The lower end of the range represents the trip generation analysis summarized in Table 2 of Appendix A, while the upper end assumes about 25% more transit ridership based on transit improvements in the MUNI Five-Year-Plan and on possible general increases in transit use over the next several years. Higher transit ridership would mean correspondingly fewer auto trips, with some reduction in impacts described in Subsection 4 above. (See Appendix A, page 193). In the analysis that follows, figures relating to both scenarios are presented together, with the higher ridership scenario enclosed in parentheses.

An estimated 1,410 (1,590) daily transit trips would be generated by the project, of which 235 (275) trips would occur during the evening peak hour (about 5-6 p.m.). Of these, an estimated 155 (180) trips would be inbound to the project and 80 (95) trips would be outbound from the project.

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[1] Modal split: the proportion of trips made using transit.

No information is available as to the origins of the inbound trips or the destinations of the outbound trips. Based on MUNI passenger counts on the three routes currently serving the project site, it was assumed that 60% of transit trips during the peak hour would use route 31 Balboa and 20% would use each of routes 5 Fulton and 18-46th Avenue. The likely impact of project-generated transit ridership on routes 18 and 31 is difficult to estimate, as the routes will be substantially different from the existing routes 18 and 38 they will replace.

For the purposes of analysis it has been assumed that future ridership, without the project, on these routes would be the same as for today's existing routes in the vicinity of the project. On this basis, the average evening peak-hour load factor at the project site for route 18 would change from 0.90 to 1.12 (1.15 under the higher transit ridership scenario). This is also the maximum load point for this route. However, as this line will be lengthened under the Five-Year Plan (thus increasing its service area) without a significant increase in service frequency, the load factors could be higher in the future, particularly if ridership increases significantly from the new route sections.

For Route 31, the westbound load factor during the evening peak hour would change from 0.15 without the project to 0.28 (0.30) with the project. The westbound load factor at the project site for Route 5 would remain in the 0.0 -0.10 range during the evening peak hour.

It is not known whether trips generated by the project would remain on the buses until the maximum load points on the Route 5 and 31. Assuming conservatively that three-quarters of transit trips generated by the project would use the buses as far as the maximum load point, the load factor of route 5 at the maximum load point (McAllister and Van Ness) during the evening peak-hour would change from 1.22 to 1.25.[1]

The impact on Route 31 cannot be accurately estimated at the maximum load point due to the Five-Year Plan changes and the fact that Route 31X will constitute a completely new route. The current westbound load factor during the evening peak hour averages about 1.0 (Eddy Street/Van Ness). Assuming this to be the likely minimum after service reorganization, the project would increase the load factor to 1.10. If it is assumed that in the future Route 31 and 31X will operate at or below MUNI peak period service standards, then this defines an upper limit to likely service conditions. An evening peak-hour westbound load factor of about 1.5 is thus assumed at the maximum load point. In this instance, the project would increase this load factor to about 1.6, i.e., above the MUNI standard of 1.5. The impact of the project on route 31 service levels would, therefore, lie within this range. The higher transit ridership scenario would not lead to statistically significant different load factors at the maximum load points of Routes 5 and 31.

Very little data is available for existing Sunday transit ridership in the vicinity of the project site.[2] During the Sunday peak-hour (about 4-5 p.m.) it was estimated that about 100 transit trips would be generated by the project. This would be about 44% of the transit trips generated during the weekday peak. The lower ridership would be due to both the lower overall trips generated by the project on a Sunday, and to the fact that the overall modal split[1] would be lower than on weekdays (fewer work trips would be made).

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[1] This would apply to both the low and high transit ridership scenarios.

[2] MUNI Traffic Check Data for Sunday, 4 June 1978, indicates Route 5 buses caried virtually no passengers in the vicinity of the project site throughout the day. No data is available for the Routes 18 and 38.

6. Impacts on Parking

The proposed parking provision for the project totals 721 spaces. All these spaces would be below grade, thus conforming with the requirement of the Draft Guidelines[2] for the site that "off-street parking should not be visible from any public right-of-way or adjacent property."

Although the Planning Code normally requires one off-street parking space per dwelling unit, in the case of a planned unit development the criterion in the Code specifies provision of "adequate off-street parking."[3] The proposed project would include one space per dwelling unit, as specified in the Planning Department's Draft Guidelines for Development. If provisions of the Planning Code were used in determining parking requirements for the proposed PUD, one out of every 25 spaces would be designed and designated for handicapped persons.4

Parcel 2 would provide 165 parking spaces for 160 dwelling units. Parcel 3 would include 223 spaces, 20 more than the proposed number of dwelling units. The 6,000 sq. ft. restaurant on Parcel 2 would not require off-street parking under non-PUD Planning Code parking requirements.[5] However, because Cabrillo is proposed to be closed between Parcel 2 and Parcel 3, the area could be considered a single parcel for purposes of calculating parking needs. The restaurant, in combination with the 2,000 sq. ft. of retail area on Parcel 3, would be 7,000 gross sq. ft. and occupied floor area would be 5,000 sq. ft., triggering Planning Code parking requirements. The restaurant would require 18 parking spaces and the retail facilities would need three, for a total of 21 spaces.[1] There would be a surplus of 35 spaces in the two garages, enough to satisfy Planning Code parameters, if these were used to determine PUD parking requirements. Parcel 4 would have 200 spaces for 200 condominiums.

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[1] Assumed to be 15% from the condominums.

[2] Guidelines for Development: Playland-at-the-Beach Site, Draft, 5 August 1977.

[3] City Planning Code section 304(d)2.

[4] Ibid., section 155(e).

[5] Ibid., section 151, Table 4.

Entrance to the parking areas on Parcels 2, 3, and 4 would be by security card and would not be available for public parking unless the conditional use permit for the PUD required that parking be made available for restaurant and store patrons. If this were the case, ±21 spaces would need to be placed outside the secured areas in Parcel 2 and 3 garages.

The proposed parking provision on Parcel 1 would total 133 spaces. Twenty spaces would be allocated for the use of elderly residents on the parcel (meeting Planning Code section 151 requirements). The neighborhood commercial and recreational facilities would not require parking under Planning Code section 151 because they would serve the immediate neighborhood and are considered accessory to the proposed development, unlike facilities facing the Great Highway which would be expected to serve the wider range of people coming to Ocean Beach.

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[1] Planning Code section 151, Table 4. Retail space requires one space for each 500 sq. ft. occupied floor area; the occupied floor area would be about 70% of the 2,000 gross sq. ft. Restau-rants must provide one space for each 200 sq. ft. occupied floor area; the occupied floor area would be about 60% of the 6,000 gross sq. ft.

The garage on Parcel 1 is proposed to include 113 spaces for retail and recreational facilities users. However, because about 40% of the trips to the commercial area and 60% of the trips to the recreation facilities could be from the proposed new residences, fewer than 80 parking spaces would be necessary during the estimated p.m. peak hour (5-6 p.m.) demand for parking.[1] Under this scenario, a surplus of about 30 spaces would be available during the p.m. peak hour in the Parcel 1 garage. If members of the recreational club were isued security cards for the 10-15 surplus spaces in the Parcel 2 or 3 garage, there would be about three to five more extra spaces in the Parcel 1 garage.

The current curbside parking spaces on La Playa between Cabrillo and Balboa would be removed by the project due to the closure of this street to automobile traffic. Curbside parking facilities on the other streets in the area of the project wold remain unaffected by the project, but would be used by residents without a second car and by users of retail space and the restaurant.

The proposed loading area behind the commercial development on Parcel 1 would conform with the Draft Development Guidelines for the site, which state: "One off-street loading area is required per 10,000 to 60,000 square feet of gross floor area of retail use."

Proposed Access to Project Parking Facilities. All project parking facilities would be located underground. The proposed access points to the garages on each development parcel would be as follows (see also Figure 4):

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[1] Based on auto trip generation for retail facilities of about 155 cars and for recreational facilities of about 3 cars, and a 30-minute stay for users of retail facilities. Modified from information in Appendix A. These figures represent a worst-case situation, but do not include cars parked in the Parcel 1 garage by any restaurant users not parking in Parcel 2 or 3 garages or on the street.

Parcel 1	from Cabrillo (entrance only) from Balboa (entrance/exit)
Parcel 2	from La Playa (entrance/exit)
Parcel 3	from Balboa (entrance/exit)
Parcel 4	from Balboa (entrance/exit) from Great Highway (exit only)

These proposed access points would conform with the Draft Development Guidelines for development for the site, which state: "Fulton Street should not be used for direct vehicular access to the site. Vehicular access from the Great Highway should be kept to a minimum."

These garage access points would be located to achieve separation between vehicular traffic and the buses that would use the proposed turnaround facility at the south of Parcel 1. The access to Parcel 1 from Cabrillo, while located next to the turnaround, is proposed by the developer as an additional entrance to the garage on this parcel to diffuse the traffic impact of the proposed commercial facilities. The proximity of this access to the bus turnaround is discussed in Section IV.I.5., page 104.

7. Impact On Other Modes

The proposed project would provide for bicycle access to both of the pedestrian areas of the project, on La Playa between Balboa and Cabrillo and between Cabrillo and the Great Highway. The bicycle routes designated in the Comprehensive Plan[1] would remain operational with the project.

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[1] See Section IV. I. 1., page 94.

No information is available on the future levels of pedestrian activity in the area of the project. The principal pedestrian generators would be the project itself, the beach, the proposed bus turnaround, and the existing Safeway store. Further away from the project, Golden Gate Park and Sutro Heights Park would also be pedestrian generators.

Many of the pedestrian movements between these generators would be accommodated by the existing crosswalks in the area of the project. From the beach, access to the project retail facilities and the bus turnaround would be either Balboa Street or the new pedestrian area at the end of Cabrillo Street. Crosswalks are currently provided at all these locations. The project design would thus conform with the requirement in the Development Guidelines for the site that ". . . established pedestrian access routes to the beach and parks should be accommodated and enhanced." The existing crosswalk provision at the La Playa and Cabrillo Street intersection would accommodate pedestrian movements between the existing Safeway store, and the proposed bus turnaround and the project commercial facilities.

Pedestrians walking to the project from either Golden Gate Park or Sutro Heights Park could use the existing crosswalks on Fulton Street (at the Great Highway, La Playa, and 48th Avenue) and on Balboa (at the Great Highway).

No information is available as to the number of service vehicles that would use the pedestrianized section of La Playa Street. Delivery vehicles would use the rear access from Cabrillo to the commercial establishments on Parcel 1. Assuming present schedules are maintained, a maximum of 8 or 9 Route 18 diesel buses would pass through the pedestrianized area in both directions in the peak hour. During the midday period the number would be reduced to about 6 or 7. Pedestrian/transit malls have been proved successful in extensive applications in Europe and Canada and are beginning to be introduced to cities in the United States.[1]

J. CLIMATE AND AIR QUALITY

1. Wind

A wind tunnel test was carried out on a model of the proposed project site based on drawings prepared by the architect. Because the site is currently unoccupied and access is restricted, tests were not made on the site as it now exists. A detailed discussion of the results of the wind tunnel test is contained in Appendix C, page 209.

The study results indicated that the east-west orientation of buildings on the site would tend to accelerate winds between them where the plaza areas would be located. But, because of the extensive landscaping planned, these winds would be less than those in an open exposed location. The proposed pedestrian walkway, an extension of Cabrillo Street, was found to have little shelter from the wind. Thus the project partially conforms with the 1977 Draft Guidelines for Development, which state:

> "Open space . . . should be oriented to receive maximum sunlight and maximum wind protection. Planting, seating and other amenities should be provided . . ."

The retail mall would be generally sheltered from westerly-wind by intervening buildings, but high winds would occur during northwest winds where the mall meets Balboa Street. These winds are caused by the channeling effect of the hillside north of Balboa Street.

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[1] Transit malls are currently in operation, for example, in Minneapolis, Vancouver, and Portland, and a mall is planned for Buffalo.

2. Air Quality

a. Construction Impacts

Implementation of the proposed project could result in a short-term increase in suspended particulate matter over a maximum one-two block area during the construction phase, which would be a nuisance to pedestrians and residences adjacent to the site.

b. Local Effects

Roadside carbon monoxide (CO) concentrations (CO is the most common local air pollutant) were developed for existing conditions and for future (1985) conditions after implementation of the proposed project. Concentrations caused by local traffic were estimated for meteorological conditions which restrict diffusion of CO (a "worst-case" condition).[1] In predicting pollution emission rates, an average speed of 25 mph was assumed for the Great Highway, and 20 mph was assumed for all other streets.[2]

Existing traffic volumes and 1985 volumes with and without the proposed project were provided by the project traffic consultant.

The results for worst-case meteorological conditions are summarized in Table 5 below.

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[1] About 2 miles per hour wind (one meter per second) forming a 22½ degree angle with the roadway, under stable atomospheric conditions.

[2] Vehicle pollution emission rates are taken from data supplied by the Bay Area Air Quality Management District (BAAQMD), updated by the most recent EPA emission factors. BAAQMD, Guidelines for Air Quality Impact Analysis of Projects, Technical Services Division Information Bulletin, 1 June 1975; and Association of Bay Area Governments (ABAG) memorandum from Ron Wada to Mike Kim regarding Modifications to Baseline Emisions Inventory due to EPA's Supplement 8, 18 July 1977.

TABLE 5
Roadside Carbon Monoxide Concentrations under Adverse Meteorological Conditions
(parts per million)

	Existing		1985		1985 with project	
	1 Hour	8 Hour	1 Hour	8 Hour	1 Hour	8 Hour
Great Highway	2.2	0.8	2.0	0.8	2.2	0.9
Balboa Street	0.4	0.1	0.4	0.1	0.7	0.2
Fulton Street	2.1	0.5	2.1	0.5	2.2	0.6

The above concentrations represent the exposure a person would have at curbside. Carbon monoxide levels drop off rapidly with distance from curbside.

The predicted concentrations in Table 5 are to be compared with the federal ambient air quality standards of 35 and 9 parts per million for the 1- and 8-hour averaging periods, respectively. All predicted concentrations are below the standards.

The effect of the project would be to increase CO concentrations by about 0.1 to 0.3 parts per million in the vicinity of the project. The project's effects would be greatest on Balboa Street, although CO concentrations would remain low compared to the standards.

c. Regional Effects

Regional effects are related to the vehicle miles traveled (VMT) associated with the proposed project. Total trip generation due to the project has been estimated at about 9,000 trips per day, of which 5,200 would be auto trips and 1,400 would be transit trips. An average two-way trip length of 12 miles has been estimated by the transportation consultant, resulting in a daily VMT increase of 62,400. Emissions estimates are based on emission factors[1] for an average trip speed of 20 miles per hour. Projected daily emissions estimates in tons per day from the project and from the nine-county Bay Area are shown below.

	Project Automobile Emissions	1985 Regional Emissions Bay Region[2]
Carbon Monoxide	1.54	2,000
Organics	0.15	800
Nitrogen oxides	0.12	750

The additional emissions generated by the project would increase the pollutant burden in the region and degrade regional air quality; however, the increase in regional emissions would be at most 0.01%.

A recent study of future regional air quality[3] found that photochemical oxidant (main component of smog) would be a persistent problem in the future, and that substantial reductions in hydrocarbon and nitrogen oxide emissions, which result in the formation of photochemical oxidant, would be necessary to attain the federal standard for photochemical oxidant in the Bay Area. The project would increase emissions of these pollutants, making attainment of the standard for oxidant more difficult, but the total increase would not be statistically significant in a regional context.

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[1] BAAQMD, Guidelines for Air Quality Impact Analysis of Projects, 1975, updated with "Supplement 8" emission rate.

[2] BAAQMD, Emissions Inventory Summary Report, August 1976.

[3] Association of Bay Area Governments, Draft Environmental Management Plan, December 1977, adopted 10 June 1978 by the ABAG General Assembly.

K. NOISE

1. Vehicular Traffic Noise (Except Buses)

The altered pattern of vehicular traffic in the vicinity of the project would affect future noise levels. The change in traffic noise levels can be assessed using a criterion based on increases in ambient noise. The criterion classifies the increase in traffic noise levels and associated impacts into three categories as follows:

Increase in the Ambient Criterion[1]

Increase in Traffic Noise Level, dBA	Impact Assessment	Expected Community Response
Less than 6	No Impact	Rare expressions of dissatisfaction are expected
6 to 15	Some Impact	Some individual comment and reaction are expected, but no group action is likely
Greater than 15	Great Impact	Strong individual comment and reaction are expected, as well as the potential of group action

If the proposed project were implemented, traffic volume on 48th Avenue between Balboa and Cabrillo Streets is predicted to increase from 140 vehicles per day to about

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[1] C. G. Gordon et al., "Highway Noise: A Design Guide for Highway Engineers," National Cooperative Highway Research Program, 1971.

1,400 vehicles per day in a "worst-case" situation.[1] This change would generate a 7-dBA increase in the traffic noise levels generated along this street. Cabrillo Street, Balboa Street, and 47th Avenue would all experience a 3- to 4-dBA increase in traffic noise levels based on their respective projected traffic volume increases. Between Cabrillo and Fulton Streets, 48th Avenue would experience a 1- to 2-dBA increase in traffic noise levels. Traffic volumes along Fulton Street and the Great Highway would be up to 10% greater than the existing volumes; this change would cause less than 1-dBA increase in traffic noise, which is imperceptible.

Referring to the above criteria, the 7-dBA increase in the ambient noise levels due to altered vehicular traffic volumes would be noticed by some residents along 48th Avenue between Cabrillo and Balboa Streets and would cause some comment and individual reaction. Other traffic volume increases would not be expected to cause an impact.

The project would be exposed to noise generated by vehicular traffic on the Great Highway. The existing L_{dn}[2] along the western property line of the project adjacent to the Great Highway is approximately 70 dB. The maximum L_{dn} recommended by the City and County of San Francisco for residential use without special noise insulation requirements is 60 dB.[3] If new residential construction is considered in areas exposed to an L_{dn} between 60 and 70, then the following guidelines are set forth:[1]

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[1] Traffic data by A.M. Voorhees Associates, Inc.

[2] L_{dn} is the "day-night" average level, a 24-hour noise descriptor. L_{dn} contains a 10-decibel weighting for noise levels during nighttime hours (10 p.m. to 7 a.m.) to account for people's increased sensitivity to noise at night.

[3] City and County of San Francisco, "The Plan for Transportation Noise Control," a Section of the Environmental Protection Element, adopted 1974, City Planning Commission Resolution No. 7244.

60 to 65 L_{dn} Environment	65 to 70 L_{dn} Environment
New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design.	New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

2. Bus Traffic

The MUNI bus traffic volumes and bus noise emission levels are expected to remain stable.[2] The proposed future location of the bus turnaround near the project on the northeast corner of Cabrillo and La Playa Streets would result in adjacent residents (both existing and planned) being exposed to intermittent high noise levels when buses arrive and depart. In the future, existing residences located on Cabrillo Street east of 48th Avenue would continue to experience noise levels generated by diesel-powered buses on Cabrillo Street regardless of the proposed bus turnaround relocation.

In order to protect project residents from high interior noise levels generated by arriving and departing diesel-powered buses, acoustical glazing would be installed in all units fronting La Playa Street. The existing homes adjacent to the turnaround would be shielded from the bus noise by a full height wall enclosing the east side of the turnaround structure.

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[1] City and County of San Francisco, "The Plan for Transportation Noise Control," a Section of the Environmental Pro-tection Element, adopted 1974, City Planning Commission Reso-lution No. 7244.

[2] A. M. Voorhees, Associates, Inc.

It is planned that the 18 Sloat route will continue to follow La Playa Street between Balboa and Cabrillo. The intrusive noise levels generated by individual buses passing by could annoy the project residents living along La Playa, especially during the early morning and late evening hours.

3. Construction Noise

The noise generated by equipment used to construct the project would temporarily cause an increase in ambient noise levels adjacent to the project site. The San Francisco Noise Ordinance limits the noise emission of construction equipment to 80 dBA at 100 feet.[1] The construction processes would not include pile-driving nor are nighttime construction operations anticipated. Experience with construction projects indicate the L_{dn} may temporarily increase to 75 dB when engine-powered construction equipment used on the site is operating close to the existing homes fronting 48th Avenue and Balboa Street.

4. Operations Noise

After the project is completed, delivery and service vehicles would use the service road located on the east side of the site. When trucks are maneuvering and unloading in the service area, people who live in the existing residences 25 to 50 feet east of the service road may be annoyed by the noise.

The noise caused by the project's mechanical equipment (such as air conditioning) might also disturb the residents to the east of the site. It is not possible to evaluate the generated mechanical equipment noise levels at this stage of project design. The San Francisco Noise Ordinance prescribes property-line noise limits for mechanical equipment.[1] If the project mechanical equipment met the ordinance requirements, no noise impact would occur for the adjacent residents.

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[1] City and County of San Francisco Municipal Code, Article 29, Regulation of Noise. Noise limits are 55 dBA from 7 a.m. to 10 p.m.; 50 dBA from 10 p.m. to 7 a.m.

L. COMMUNITY SERVICES

1. Water Supply

The project would consume an average of approximately 100,000 gallons per day, or 0.1 million gallons per day (mgd).[2] Water requirements for landscaping are not included in this figure and are unknown at the present time. The landscape plan for La Playa and the end of Cabrillo Street would have to be approved by the San Francisco Water Department to make sure all pipes are accessible.[3]

The present domestic service to the proposed project is adequate, although it is inadequate to handle fire protection.[4]

The proposed project can be served by 6" water mains on Balboa Street, La Playa Street, Cabrillo Street or from an 8" main on Fulton Street. The costs for the construction of new pipes would be paid by either the Water Department or the project sponsor, depending on the following determinations:

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[1] City and County of San Francisco Municipal Code, Article 29, Regulation of Noise Limits are 55 dBA from 7 a.m. to 10 p.m.; 50 dBA from 10 p.m. to 7 a.m.

[2] Based on information supplied by Charles and Braun Consul-ting Engineers and Sandy/Babcock, 7 August 1978.

[3] John Kenck, Manager, City Distribution Division, San Francisco Water District, personal communication, 21 August 1978.

[4] Ibid.

1. If a new project requires that a larger pipe be installed and that its installation would benefit the surrounding area, thus improving the entire water system, the Water Department may pay for some of the improvement costs.
2. If the domestic load for a new project requires that a new 6" pipe be installed and that an 8" pipe would be needed to handle the additional fire protection load, the project sponsor would be required to pay the difference between the costs of the 6" and the 8" pipes.
3. If an existing pipe can handle the domestic load of a new project, but that a larger pipe would be required to handle the fire protection load, the project sponsor would be responsible for the total costs of the new pipe system.

It is likely that the project sponsor would incur this cost, although a formal determination has not been requested from the Fire Department.

2. Wastewater

Wastewater flows are usually about equal to water consumption and would be about 0.1 mgd, or 0.5% of the Richmond Sunset treatment plant average dry weather flow of 22 mgd.[1] Although the treatment plant could treat wastewater during dry weather, the proposed project would add an additional 0.1 mgd to the sewer system from rainwater runoff. The plant is presently unable to treat all flows during wet weather, so some portion of the combined flows from the project would be discharged untreated through bypass outfalls on Ocean Beach during wet weather.

Completion of the proposed West Side Transport/Storage Project and Southwest Treatment Plant in the mid-1980s would serve the proposed project. At the present time, it is predicted that the Southwest Treatment Plant would have an average dry weather capacity of about 22 mgd and a wet weather capacity between 400 and 480 mgd, depending on the number of overflows of untreated sewage allowed on the east San Francisco shoreline.[1] The proposed project would produce about 0.5% of the Southwest Treatment Plant's dry-weather capacity and about 0.05% of the plant's wet-weather capacity. The Wastewater Program projects for the west side of the City are proposed in order to bring the City into compliance with state and federal laws and regulations and would be necessary regardless of the status of the proposed development project.

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[1] Don Munakata, South West Project Manager, Bureau of Sanitary Engineering, City and County of San Francisco, personal communication, 16 October 1978.

3. Solid Wastes

Prior to constructing the proposed project, several existing structures and foundations on the site would require demolition and removal. The amount of debris that would be generated by demolition is estimated at approximately 114,000 cubic feet or 4,200 cubic yards.[2] The disposal site for debris removal would probably be privately owned by a demolition or trucking company.

The proposed project would generate approximately 3,900 lbs. of solid waste per day, or about 712 tons per year. Residential solid waste would account for about 85% of this amount, the remainder coming from commercial and recreational sources. The total waste generated would represent 0.12% of the 633,000 tons of refuse landfilled annually in Mountain View.[3]

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[1] Carol Thompson, Environmental Analyst, San Francisco Wastewater Program, telephone converation, 31 May 1979.

[2] Letter from Diane Crawford of Sandy/Babcock to Steve Krenzelok of EIP Corporation, 27 July 1978.

[3] California Solid Waste Management Board, Solid Waste Generation Factors in California, Technical Information Series Bulletin No. 2, 8 July 1974.

4. Police Service

The proposed project could affect the services provided by the San Francisco Police Department by increasing the reported incidents requiring police intervention. The police department has indicated that it is not possible to predict the number of incidents that need to be responded to, or the necessity of hiring new personnel to handle increased services until the project has been in operation for some time.[1]

A security guard would be provided 24 hours a day at the proposed project during its operation. This would be augmented by a security patrol of the commercial area.

5. Fire Protection

The proposed project would be served by the fire stations at 42nd Avenue and Geary and at 45th Avenue and Judah. The San Francisco Fire Department has indicated that the proposed project would not require additional fire department personnel to provide fire protection services.[2]

The present water service to the proposed project site is not adequate to handle fire protection. To provide an estimated required flow of 7,000 gallons per minute (gpm) to the project site, a 16" main would need to be extended from 39th Avenue to the project site.[3] Also, an intermediate fire hydrant would be required on La Playa Street midway between Cabrillo and Balboa. Costs related to any adjustments to existing facilities to accommodate construction cannot be determined until plans are submitted. Costs would be borne by the developer.

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[1] Lieutenant Thomas O'Donnel, Planning and Research Division, San Francisco Police Department, personal communication, 12 October 1978.

[2] Minutes of meeting between the San Francisco Water Depart-ment, the San Francisco Fire Department, Sandy/Babcock, and EIP Corporation, 21 August 1978.

[3] Memo from Sandy/Babcock to George Nakagaki of the San Francisco Water District, 27 September 1978.

6. Schools

The project sponsor's market study states that primary response to the development would be from mature adults (45-65 years). It is expected, therefore, that no more than 50 kindergarten through 12th grade age children would reside in the project.

As the San Francisco school population is declining, and the project would probably generate no more than 50 K-12 students, implementation of the proposed project is not expected to have an effect on the three public schools that serve the project site.

M. ENERGY

During construction, the direct consumption of energy on site is estimated to be the equivalent of 44.8 million kilowatt houws (kwh) of electricity.[1]

During operation, the project would use natural gas for space and water heating and would conform to state energy conservation standards (California Administrative Code, Title 24, Section 6). Connected kilowatt load would be approximately 1,500 kilowatts based on normal requirements for a residential/commercial structure of this magnitude in San Francisco.[2] The project would require approximately 235,000 kwh per month (0.271 kwh per square foot of interior floor space), or about

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[1] Based on an estimated energy consumption of 11 million kwh per $10 million of construction cost. Project cost is estimated at $40.7 million.

2.8 million kwh per year. Variation due to electric load would be almost entirely due to lighting. A minor peak would be expected during the early morning hours, and a major peak during the early evening hours between 5 p.m. and 11 p.m. Annual use would peak during the short days of winter and would be lowest during the long days of summer.

The project would require approximately 250 million British Thermal Units (Btu) of natural gas per day (289 Btu per square foot per day). Since specific information on choice of space and water heating equipment is not available, a specific figure for peak fossil fuel consumption cannot be given. However, a figure on the order of 40 million Btu per hour can be expected. Natural gas load distribution curves are shown in Figure 24, page 127.

N. ECONOMICS

1. Construction Employment

The total cost of the project is estimated to be $40.7 million (1978 dollars). When this cost is inflated at 8% per year over the four-year construction period the figure becomes $50.9 million. It is further assumed that about 60% of construction cost would go into labor and that a labor rate of $22 per hour (1978 dollars)--including direct wages, payroll taxes, fringe benefits and profits--would apply. When this hourly rate is adjusted for inflation at

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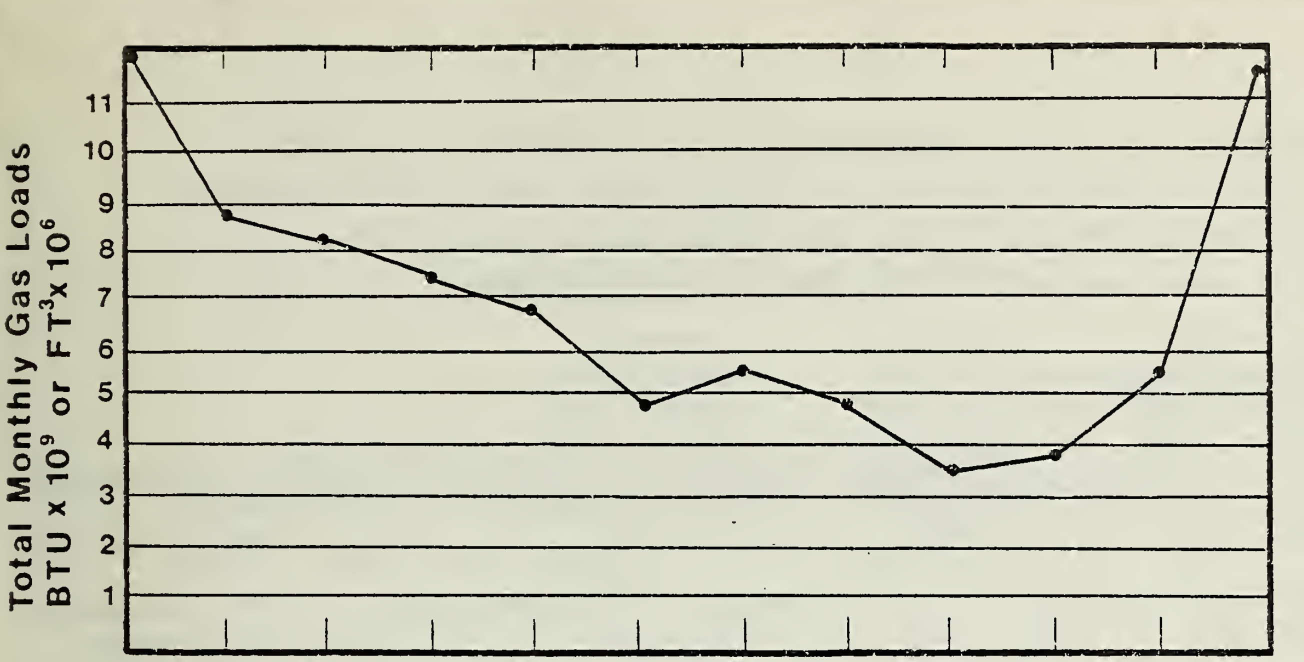
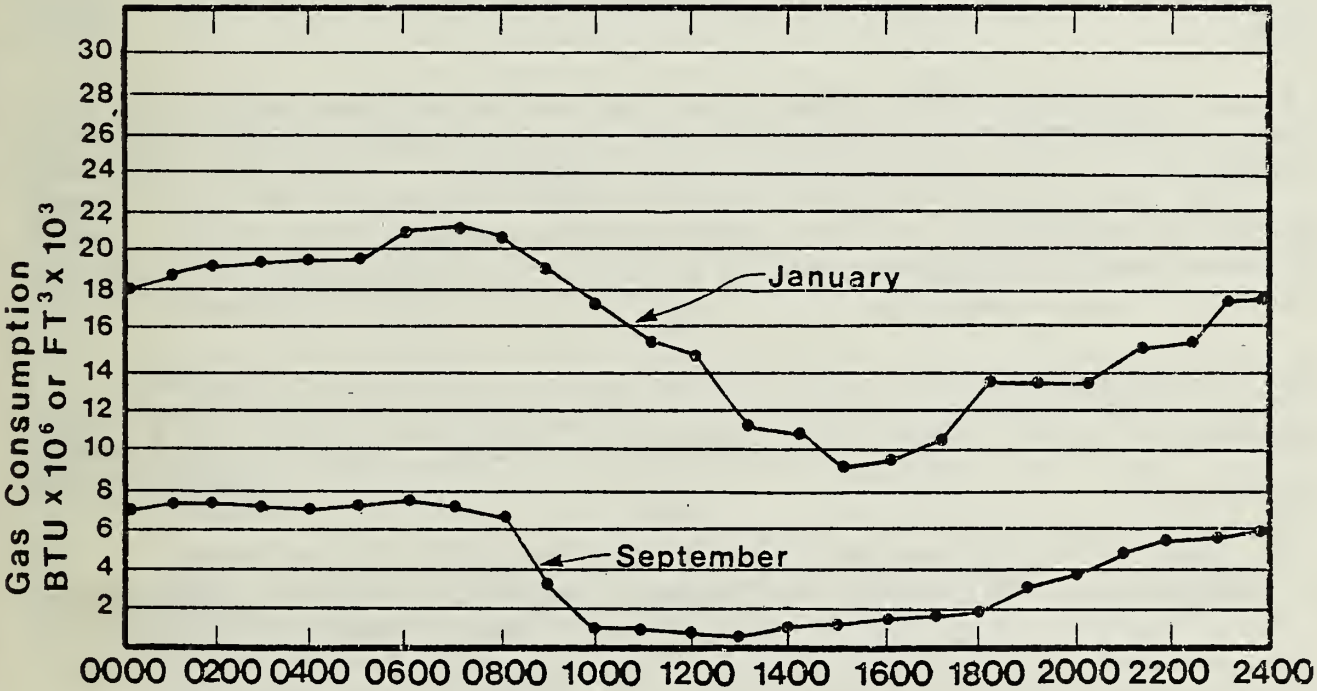
[1] Based on an estimated energy consumption of 11 million kwh per $10 million of construction cost. Project cost is estimated at $40.7 million.

[2] Jerry Tyson, Marketing Supervisor, Pacific Gas and Elec-tric, San Francisco Division, telephone conversation, 16 February 1979.

[3] Bill Hancock, Energy Utilization Engineer, Pacific Gas and Electric Company, San Francisco Division, personal communication, 16 February 1979.



Monthly Consumption



Hourly Consumption

Natural Gas Load Distribution

Figure No.24

8% per year, the labor provided is estimated to be about 1,087,000 person-hours, or 543.5 years (at 2,000 work hours per person-year).[1] Project construction would last about 4.3 years and employ an average of 126 workers per year.

2. Permanent Employment

The project would generate work for approximately 180 full-time employees as shown in Table 6. The estimates for restaurant and commercial shop workers are based on one per 350 gross sq. ft. and one per 450 gross sq. ft., respectively.

Table 6
Estimated Full-Time Employees

Function	Condominiums	Commercial	Elderly-Housing	Total
Manager	1	1	1	3
Assistant Manager	3			3
Clerk	1			1
Restaurant Workers		17		17
Commercial Shop Workers		138		38
Janitors	4	2	1	7
Security	4	0	0	4
Mechanical	4	1	1	6
Total	17	159	3	179

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[1] Personal communication, T.K. Kutay, Ocean Beach Associates, 13 November 1978.

TABLE 7

Estimated Municipal Revenues

Tax Revenue Source	Annual Estimated Tax Revenue (Projected Actual $ in 1985)	City Share (Percent)	City of San Francisco Annual Tax Revenue (Projected Actual $ in 1985)
Property Tax[1]	$ 890,000	64[2]	$ 570,000
Sales Tax (commercial sales)	610,000[3]	15.4	94,000
Payroll Taxes[4]	15,000	100	15,000
Total	$ 1,515,000		$ 679,000

[1] For the computation of property tax revenue, it is assumed that the market value is equal to the estimated sales price of all the units in 1985. Estimated sales price is based on an average unit price of $94,000 in 1978 dollars, inflated at 8% per year to 1985. It is furthermore assumed that the tax rate could be highly variable by 1984, but for purposes of the analysis it was computed at 1% of market value.

[2] Property taxes are collected for the City and County of San Francisco, the San Francisco Unified School District, BART, and other miscellaneous special districts. The City of San Francisco receives 64%.

[3] Based on a sales tax rate of 6.5 percent for the State of California. Amount of sales is based on the 68,000 square feet of restaurant and shop space.

[4] Payroll is assumed as 14.5 percent of $9.4 million sales in 1985. The payroll taxes are 1.1% of the gross payroll.

Most of the potential employment positions would be created by the commercial space. The other positions would be related to the management and maintenance of the condominium, senior housing, and the club facilities. Other jobs related to the project would be part-time and would probably be done on a contractural basis. These would include jobs associated with gardening, pool cleaning, elevator maintenance, further secruity patrol and outdoor maintenance.

3. Revenues

Municipal tax revenues to the City and County of San Francisco generated by the proposed project are estimated for a typical year after completion of development in Table 7. When the proposed project is fully implemented, the total revenues to the City would be $679,000 (1985 dollars) compared to $37,000 in present annual tax revenues.

The projected revenue does not include the 1½% tax of selling the condominium units. This is not an annual tax, but is paid only at the time of sale of each unit. The estimated revenue to the City from the initial sale of the condominum units is $1.3 million (1985 dollars).

4. Municipal Costs

Increases in annual municipal capital and operating costs due to the development of the proposed project would be estimated at $2,000 (1978 dollars) as shown below. The project sponsor would provide on-site and off-site capital improvements related to municipal services including the MUNI turn-around and street lights, and installation of sewers, water mains, and storm drains to connect with existing municipal systems.

Based on the current experience of each of the City Departments involved and the characteristics of the capital improvements provided by the developer, the following increases in municipal costs are estimated:

Table 8
Estimated Municipal Costs

Urban Service	Increase in Annual Municipal Operating Costs (1978 Dollars)
Police Protection	Miminal[1]
Fire Protection	Minimal[2]
Water and Sewer Service	Operation paid for by sewer charge
Street Maintenance & Cleaning	\$2,000[3]

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[1] Based on communications with Lt. Thomas O'Donnel, San Francisco Police Department, September 1978.

[2] Based on communications with Asst. Fire Chief Rose, San Francisco Fire Department September 1978.

[3] Estimate given by Scott Shoaf Public Works, and Tom O'Brian, Street Cleaning Division, Public Works, September 1978.

O. GROWTH-INDUCING IMPACTS

When fully implemented, the proposed project would house approximately 1,300 people (including about 131 in the senior housing) and would provide about 159 new jobs, primarily restaurant and commercial shop positions. The project sponsor expects potential residents to be principally couples in the 45-65 age groups and secondarily couples under 45 years.[1] Most of the workers are expected to come from San Francisco, with some from northern San Mateo County as well as the East Bay.

The population in San Francisco is gradually decreasing and the proposed project is not expected to contribute to growth inducement in the City. Most potential residents would probably come from outside the Richmond District, however, and would place an additional demand for secondary services provided in the area, including food goods, transportation, and public service facilities. Consumer sales in the Richmond District would be expected to increase.

P. COMMUNITY CONCERNS

Several public hearings and community meetings on the project have been held:

20 April 1978--A public hearing was held before the City Planning Commission, on request of the Mayor's office, to examine various uses which had been proposed for the Playland-at-the-Beach site.

27 April 1978--A community meeting chaired by Supervisor Gordon Lau was held at St. Thomas the Apostle School to present the proposed project to Richmond District Residents, and to

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[1] Unpublished marketing survey prepared by the project sponsor, Ocean Beach Associates, August 1978.

elicit concerns and questions about future development on the site.

13 July 1978--A second community meeting chaired by Supervisor Lau was held at St. Thomas the Apostle School at which the proposed project was again presented to the public. Supervisor Dianne Feinstein and Amy Meyer of People for a Golden Gate National Recreation Area presented opposing views on the project.

10 August 1978--A public hearing was held before the City Planning Commission on an appeal of the Planning Department requirement that an EIR be prepared for the proposed project. Neighborhood groups and staff of the North Central Regional Coastal Commission supported the requirement for an EIR; the Commission voted to uphold the Department's requirement (Resolution No. 8042).

24 May 1979--A Community meeting was held by project sponsor at St. Thomas the Apostle School to present information about the proposed project and answer questions from the community cncerning the project design.

In addition, conversations have occurred between residents of the area and Department of City Planning and the EIR consultants during the months of August 1978 through May 1979.

A number of community groups and individuals have expressed views on the project. In general, concern appears to be divided between those who view the project as an opportunity to increase the housing supply in San Francisco and contribute revenues to the City, and those who value the park and recreation potential of the site and want to preserve it as public open space. The attitudes of several representative community groups are presented below.

People for a Golden Gate National Recreation ARea is an organization devoted to supporting development of the GGNRA. The organization advocates preservation of the headlands of the Golden Gate in public open space in perpetuity. The organization opposes the proposed project because it would like the entire site to serve as a buffer between the Ocean and the urbanized residential area of the City.[1] A broad buffer strip of open space would provide more flexible recreational use of the area. Some low-key coastal-related recreational facilities could be developed in the flat areas with trail access to Sutro Heights Park and Land's End.

San Franciso Tomorrow supports acquisition of Parcel 4 for the GGNRA and is concerned with traffic impact of development in the area.[2]

The San Francisco Bay Chapter of the Sierra Club has supported Federal legislation to add the area north of Balboa Street to the GGNRA top preserve the integrity of Sutro Heights bluff. The organization is not opposed to development on Parcels 1, 2 and 3.[3].

The Planning Association for the Richmond (P.A.R.) opposes high-density residential development on the site and advocates open space as the most acceptable use.[4] P.A.R. prepared a neighborhood plan, the Richmond District Improvement Plan, in 1972. This Plan contains a number of policies concerning maintenance of family-type housing and provision of housing for various socioeconomic groups. The Residence section suggests down-zoning in some areas (some of which was implemented in the 1978 residential rezoning ordinance), and recommends use of controls that would make new construction sympathetic with existing neighborhood character, such as required buidling setbacks conforming to those existing, bay windows with glass on all sides and restricted length and number of curb cuts. The Plan recommends use of street rights of way for recreational facilities and encourages safe crossing to Ocean Beach; it discourages increased housing density in the Richmond District and recommends improving transit and reducing auto traffic on residential streets.[1] The proposed project is consistent with policies for family-type housing, proposing over 60%two-bedroom or larger dwelling units, with policies for use of street rights-of-way, proposing closing one block of Cabrillo to all vehicular traffic and one block of La Playa to all but bus and emergency vehicles; and with some policies for design compatibility, such as minimal curb cuts and all-glass modified bay windows. However, the project would provide housing at a higher density than that generally found in the Richmond and would provide buildings of a somewhat larger scale than the surrounding row-houses. The higher density and larger scale would be partially offset by the additional private open space in the plazas between buildings and by underground parking which would allow dwelling units rather than garage space on the ground level.

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[1] Telephone conversation between EIP and Amy Meyer, 4 August 1978.

[2] Testimony by Diane Hunter at 20 April 1978 Planning Commission Public Hearing.

[3] Testimony by Mina Eloesser, Sierra Club Bay Chapter representative, at 20 April 1978 Planning Commission Public Hearing.

[4] Testimony by Arden Danicus, President of P.A.R., at 20 April 1978 Planning Commission Public Hearing.

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[1] The Plan also recommends use of traffic diverters to provide for protected residential streets. This plan was implemented by the City in 1975 but was vigorously opposed by manyt Richmond residents; the diverters were removed in 1976 following a public vote against them.

The Committee to Save Ocean Beach, a group of Richmond residents especially concerned with the nature of development at the proposed project site, has been discussing the site for several years and is now a Committee of P.A.R. The Committee favors acquisition of all of Parcel 4 by GGNRA and is opposed to high-density development on Parcels 1, 2, and 3. Issues of concern include view blockage, cost of City Services without offset by tax revenues, increased traffic, and potential for trampling of plants in Sutro Heights Park by new people using the area.[1] Committee members are working with designers to develop alternative designs and building configurations for the proposed project. The alternatives were not available at the writing of this Draft EIR but are expected to be presented to the City Planning Commission at the public hearing on the Draft EIR and to be included in the Final EIR.[2]

The Richmond District Council supports housing as the most appropriate use of the site, as there is sufficient open space in the area. The proposed project would relieve the housing shortage and, thereby, help reduce the cost of housing.[3]

The Rossi Park Property Owners Association favors the project because it would add to the housing stock in San Francisco. In particular, the organization wants quality rental housing to be provided by the project.[4]

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[1] Presentation by Nils Erch, 13 July 1978 public meeting; Meeting of City Planning staff and Committee members, 21 May 1979.

[2] Nils Erch and Barbara Turner, personal communication and telephone conversations, 21, 22 and 25 May 1979.

[3] Testimony by Ed Lawson, President of the Richmond District Council, at 20 April 1978 Planning Commission Public Hearing.

[4] Testimony by Patrick Walsh, President, Rossi Park Property Owners Association, at 10 August 1978 Planning Commision Public Hearing.

CHAPTER V
MITIGATION MEASURES

A. RECREATION AND OPEN SPACE

Mitigation measures incorporated in the project include recreational facilities available to the public and public open space between Parcels 2 and 3 and between Parcels 1 and 3.

Two mitigation measures which are outside the physical limits of the project could improve pedestrian access to adjacent recreation and open space areas. The project sponsor has indicated his willingness to discuss potential participation in the cost of these improvements. The first would involve emphasizing pedestrian access from the mall at the end of Cabrillo Street to Ocean Beach by visually defining a pedestrian right-of-way crossing the Great Highway. This would be done by using a paving material different from that used to surface the Great Highway, providing plant materials of increased height and different color relative to other planting in the area, and/or installing stop signs or traffic signals to denote the area as one of pedestrian activity. The need for and appropriateness of new signals and signs would be evaluated by the Department of Public Works. Installation would depend on placement on the priority list for such installations and the availability of funds, unless required of the project sponsor as part of project approval. The City could require the project approval. This decision would be part of the City Planning Commission's conditional use permit determination.

The second measure would involve additional planning and design to establish pedestrian access to Sutro Heights

Park along the east margin of Parcel 4, as suggested in the City Planning Draft Guidelines for Development. Planning and design would require participation by the project sponsor, the Coastal Commission, the National Park Service, and the City of San Francisco.

B. VISUAL QUALITY

1. Architectural Compatibility

The project sponsor has not prepared detailed plans for landscape development. However, street trees and trees to be installed in raised planters are being planned in the project. Street tree plantings would be provided along the sidewalk fronting the Great Highway, Balboa, Cabrillo, Fulton and the west side of La Playa between Cabrillo and Fulton.

On-site tree planting would include the plazas of Parcels 2, 3 and 4, courtyards, both sides of La Playa between Balboa and Cabrillo, and the east side of Parcel 1.

2. Views

Views east from the project toward the Safeway store and adjacent parking areas would be mitigated by planting trees along La Playa Street. Views toward the structure on Parcel 1 and the MUNI bus turnaround would be enhanced by tree plantings proposed between Parcel 1 and adjacent residences to the east. These trees would be planted in 10 foot wide buffer strip to be provided as a part of the project.[1]

The restriction of structures to the flat portion of Parcel 4 would visually preserve the existing slopes leading up to Sutro Heights Park (see Section VII.C page 157). Open space surrounding the project would be expanded relative to the proposed project and the park landscape would be seen to extend downward to the Great Highway in sympathy with the existing landform. The project sponsor has considered this mitigation measure and it is presented as an alternative and discussed further in Section VII.C, page 157.

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[1] Mr. Steve House, Sandy/Babcock, Architects and Planners, telephone conversation, 18 October 1978.

Rooftops surfaced with gravel could be light tan to light gray in color to blend with existing surroundings. The project sponsor has not made a decision on the color of roofing material. The choice of color could be established as a condition of design approval.

3. Night Lighting

To establish area lighting that provides the maximum of safety and the minimum interference with nighttime views from higher elevations around the project area, the project sponsor has agreed to consult a specialist in lighting design who would be consulted to determine the location and intensity of the lights and prescribe the type of light to be used. The project sponsor has not yet established terms of the consultant contract. In that study, consideration should be given to the effect of fog on lighting needs.

Exterior lighting should be placed in such a way as to avoid point sources of light that would interfere with the vision of motorists. If the conditional use permit is approved, the project sponsor will decide whether and how to implement this measure during the final project design process.

C. GEOLOGY

To mitigate the potential for increased erosion and slope instability and to prevent damage to structures in the sloped areas of Parcel 4, retaining walls would be constructed; the walls would extend under ground and be tied to bedrock. (For further slope stabilization mitigation measures, see Section V.E, below.) To prevent failure of the slopes the angle of repose for sand and the Colma Formation material should not be exceeded. The project sponsor has agreed to incorporate this measure in the project design.

D. HYDROLOGY

The potential groundwater build-up behind the proposed building foundations on Parcels 2 and 3 would be mitigated by employing a "gravel blanket" under the project site from the eastern to the western boundary; this would allow the groundwater to percolate under the project site on its path toward the ocean. On Parcel 4 groundwater build-up could occur along the north and eastern sides of the proposed structures. The proposed retaining walls up-slope from the buildings could further aggravate this problem. To mitigate the groundwater build-up, "gravel blankets" would be constructed under the foundations, and drains would be installed behind the retaining wall to prevent localized ponding and increase of water table beyond the property line.

E. VEGETATION

The landscaping of the proposed project site would replace existing plants and could enhance the area's appearance. Landscape plants would differ from the existing vegtation and would provide habitat for a different mix of wildlife than that which is now using the site.

Introduction of the cultivated "garden" species of vegetation could attract more birds, such as the songbirds that are common inhabitants of the urban environment. A diverse composition of plants would attract diverse wildlife species. The more landscaping done, the more food and cover habitat would be available for wildlife.

Limiting disturbance of plants on the bluff face on Parcel 4 during construction would allow existing plants to continue to retard erosion. Hydromulching[1] would be used to stabilize hillside soil after construction. Native, sand-stabilizing plants would be used in revegetation so as not to invade the established dune tansy population farther up on the meadow. These plants could include dune grass, sand verbena, sea rocket, bush lupine, and beach strawberry. The exact species to be installed would be determined during the development of the landscaping plan following project approval. Irrigation equipment would be installed to provide maintenance of hillside landscaping, in addition to the remainder of the project plantings.

Success of a revegetation program would depend on continued maintenance and protection of plants from human trampling.

As development of the project site would increase human activity in the dune meadow (see Section IV.G, Vegetation, page 92), some measures would have to be taken to protect the dune tansy population. The National Park Service has suggested three possibilities:[1]

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[1] Hydromulching: A method of applying a combination of seed, fertilizer, and mulch in water. The mixture is drilled into the slope with a hard spray of water from a hose. Given an adequate water supply, hydromulching is inexpensive. It eliminates heavy equipment and walking on the area seeded, thereby promoting slope stability. The seed area must be irrigated from time to time for seeds to sprout and grow.

1. Increase public awareness of the problem through the use of signs and an education program.
2. Designate specific trails to limit disturbance.
3. Limit use of the area by designating it a natural area.

These measures would need to be undertaken by the National Park Servce, and the project sponsor has indicated his willingness to discuss the coordination of these measures with the proposed project.

F. CULTURAL RESOURCES

Although there are no known archaeological resources on the site, the possibility still exists that yet undetected subsurface archaeological materials could be uncovered during construction. If such archaeological remains are uncovered, the project sponsor has agreed to halt construction activity for up to two weeks to allow members of a representative Native American organization and a qualified archaeologist to investigate the site.

G. TRANSPORTATION

1. Construction Mitigation Measures

During construction, trucks would be limited primarily to access routes on Fulton Street, Point Lobos Avenue, and the Great Highway to avoid impacting the principally residential streets of Balboa and Cabrillo.

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[1] Based on conversations with Nancy Stone, Park Technician, and with David Rung, Supervising Park Technician, U.S. National Park Service, 17 November 1978.

2. Operational Mitigation Measures

To reduce the number of vehicle trips generated by the retail facilities, the developer is prepared to provide secure bicycle storage and lock-up facilities on the closed, pedestrian section of La Playa Street, thus encouraging retail trips to the project to be made by bicycle rather than by car. The developer would also provide secure bicycle storage for the residential element of the project.

The condominium element of the proposed project might be suitable for the implementation of either a van-pooling or car-pooling program. The greatest potential would probably lie with a car-pooling program, due to the relatively short (about seven miles) travel distance from the project to downtown San Francisco. (A general rule of thumb used by RIDES[1] is that a round trip of 30 or more miles is necessary for a viable van-pool; otherwise capital cost repayments constuitute a disproportionate part of van-pool costs.) For a van-pool from the project to downtown San Francisco, the average roundtrip cost per passenger is estimated at $1.44.[2] This would be more expensive than riding MUNI, but cheaper than driving alone and parking in the downtown.

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[1] RIDES is a non-profit corporation designed to promote ride-sharing in the 10-county San Francisco Bay Area, principally through "pay as you go" van-pooling carrying passengers to a common destination.

[2] Fixed costs of $390/month (includes lease, insurance, tax, registration, etc.) + $32.34 variable cost per month (11¢/mile x 14 miles round trip x 21 working days/month) = total monthly cost of $422.34. Assuming 14 riders/day and 21 working days = $1.44 per round trip. Information supplied by Charna Staten, Rides for Bay Area Commuters, Inc., 100 Van Ness Avenue, 19th Floor, San Francisco.

The effectiveness of either a van-pool or car-pool program would depend on the work destinations of the condominium residents. The project sponsor, who would carry no liability or financial responsibility, is prepared to promote both van-pooling and car-pooling and to act as an intermediary in an evaluation of the potential for a RIDES program (for example, distribute and collect questionnaires for the RIDES program to evaluate).

Additional measures to reduce vehicle usage to and from the project would include the posting of transit schedules at prominent locations in the development, particularly in the retail outlets. The project sponsor would also attempt to ensure that MUNI passes, would be available for purchase from at least some of the retail outlets.

The project could potentially increase the evening peak-hour load factor of Route 31 Balboa above the MUNI standard of 1.5 to 1.6 under worst-case assumptions (see Section IV.I.5, page 104). In such an event, one additional peak-hour run would be required to maintain the 1.5 load factor service standard. This additional run would probably have to be provided by reducing service levels elsewhere in the City.

The increase in traffic on Balboa Street and 48th Avenue due to the project would increase the flow of traffic through the Balboa/48th Avenue intersection from a total of about 200 vehicles per hour without the project to about 460 vehicles with the project. Due to the steep gradient of Balboa Street west of this intersection, the current 2-way stop should be replaced with a 4-way stop provision. This measure would not interfere with transit service, as no transit is scheduled on this street. The developer has agreed to apply to the Department of Public Works for such a provision, and the Department would make recommendations based on an evaluation of the need and effectiveness of the facility. The cost would have to be borne by either the developer or come from the City Budget based upon an evaluation by the Department of Public Works of whether the facility was necessary or not without the project.

H. CLIMATE AND AIR QUALITY

1. Microclimate

A wind-tunnel test of the project as proposed was conducted to determine the need for design changes or additions to provide comfortable outdoor conditions near the site. The suggested measures are:

- Reorient project buildings from east-west to north-south to provide shelter between buildings. This measure would interfere with one project objective, i.e., to maximize views from residential units, and is unacceptable to the project sponsor.
- Provide additional landscape planting within pedestrian areas. This measure is acceptable to the project sponsor and has been incorporated in the project design.
- If Parcel 4 is left undeveloped and remains a part of the project, place a windbreak of trees or hedges along the north side of Balboa Street to provide shelter at the north end off the retail mall and along Balboa Street. Project sponsor would decide whether or not to implement this mitigation measure after a determination is made as to the status of Parcel 4.

2. Water Quality

Watering is the normal method of dust control on construction sites. The San Francisco Building Code requires that measures be taken to reduce dust generation, specifically watering down demolition materials and soils. An effective watering program (complete coverage twice daily) would reduce emmissions by about 50%. Other possible control measures include:

- Scheduling of major dust-generating activities in the early morning, when winds are low.
- Construction phasing such that major earthmoving and demolition activities occur during late fall, winter, and early spring months (when soil has maximum moisture content).
- Physical covering of storage piles.

The project sponsor would agree to the incorproation of all these measures in the construction of the project as long as no material delay in the construction program would result.

I. NOISE

1. Construction Noise

The project sponsor would include a clause in the construction contract requiring the contractor to use construction equipment which meets the noise emission limits in the San Francisco Noise Ordinance.

- Stationary engine-powered equipment such as air compressors and dewatering pumps would be operated on the west and south portions of the project site so that the existing homes on the north and east receive minimum noise exposure

- Nearby residential streets would not be used for haul truck routes.
- Construction operating hours would be limited from 7 a.m. to 5 p.m.
- The project sponsor would encourage the contractor to be a "good neighbor" through utilization of technically feasible and economically reasonable noise control measures. Furthermore, if the contractor persisted in violating the noise ordinance and complaints were received by the Department of Public Works, the City could withdraw the building permit.

2. Operations Noise and Land Use Compatibility

The State of California Noise Insulation Standards require that an acoustical report be accomplished for multi-family residential housing if the exterior noise environment exceeds 60 CNEL[1] (Community Noise Equivalent Level, a measurement comparable to L_{dn}). The acoustical evaluation must be accomplished by a qualified acoustical expert and is reviewed by the local jurdsdiction. This acoustical report would require an in-depth evaluation of the possible noise mitigation measures included below. The developer would be required to incorporate mitigation measures to reduce the interior CNEL to 45 dB. The possible means of achieving this interior noise level are listed below:

- Install acoustical glazing and forced air ventilation in the project residences fronting the Great Highway and in the project residences whose windows face the bus turnaround. This measure is already planned in the building design.

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[1] California Administrative Code, Title 25, Chapter 1, Subchapter 1, Article 4. Noise Insulation Standards, 1974.

- Install speed control devices (such as speed bumps) on La Playa between Cabrillo and Balboa so that the 18 Sloat Bus would be limited to 5-10 mph.[1]

An alternate approach to mitigate the noise from the 18 Sloat bus on La Playa between Cabrillo and Balboa would be to curtail nighttime operations on the block altogether. This decision must be evaluated by MUNI for potential effects on bus service. If the bus were rerouted during nighttime hours, the noise effects would be moved to another residential area.

The project would incorporate architectural and operational features which will minimize the bus noise impact on the adjacent community from the bus turnaround. These measures would include the following:

- Sound-absorbing material would be installed on the underside of the bus turnaround roof.
- A solid noise barrier would be erected along the east side of the bus turnaround. The barrier would extend to the roof slab and be constructed of a material whose surface weight is at least 4 lb./sq.ft.,e.g., masonry.
- Commercial truck deliveries and pickups for the project site would be restricted to the hours of 7 a.m. to 5 p.m.
- The mechanical equipment design for the project would be reviewed by an acoustical engineer to insure that the San Francisco Noise Ordinance limits are satisfied at the property line.

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[1] MUNI Planning staff have indicated that reduced bus speeds would not be acceptable (telephone conversation with Barbara Brown, 28 May 1979).

J. ENERGY

A number of measures have been incorporated in the building design to reduce energy consumption, including double-glazed windows for thermal insulation, wall and ceiling insulation as required by State standards, and use of trees as windbreaks to reduce thermal loss. Active solar energy systems were rejected because the project is located in an area of low solar incidence. Wind energy suggested in the 1977 City Planning staff Draft Guidelines for Development was rejected on the basis of economic infeasibility.

CHAPTER VI
ADVERSE ENVIRONMENTAL EFFECTS THAT CANNOT BE AVOIDED IF THE PROJECT IS IMPLEMENTED

A. LAND USE

As currently proposed, the project density would exceed that allowed by the Planning Code for a PUD under existing zoning.

B. RECREATION AND OPEN SPACE

The project would preclude the possible use of the site as open space park land that would physically link the western portion of Golden Gate Park to Sutro Heights Park, a portion of the GGNRA.

C. VISUAL QUALITY

Views toward the ocean from the rear of existing residences adjacent to Parcel 1 would be obstructed. Residences and apartments on higher terrain east of Parcel 4 would take in views of project area rooftops. Structures would be constructed on the lower slopes of Parcel 4 obstructing views looking north from the Great Highway toward the steep terrain that defines Sutro Heights Park.

D. HYDROLOGY AND WATER QUALITY

The major hydrological impact of the proposed project would be an increase in the quantity of surface runoff during storms and a worsening of the quality of this water. It is probable that the surface runoff from the site would be discharged directly into the combined sewer storm drain system. The extent of this impact would depend on the nature of the eventual development of the City's Wastewater Management Program.

E. VEGETATION

Construction of the proposed project on Parcel 4 would eliminate some vegetation in scattered locations on the dune bluff face. The direct loss of the dune tansy is contrary to the City of San Francisco's Environmental Protection Element Policy Number 3 (Policy for Flora and Fauna), which states: "protect rare and endangered species." The proposed project would also increase the amount of human activity in the project area. Greater use of the trail system between Balboa Street and Sutro Heights Park through the dune meadow could be expected. Increases in the use of the trail system through the dune meadow would accelerate the amount of trampling in this area and could be detrimental to the dune tansy population and other plants.

F. TRAFFIC AND TRANSPORTATION

During project operation, traffic volume on 48th Avenue between Balboa and Cabrillo Streets is predicted to increase from 250 vehicles per day to 1,405 vehicles per day in a worst-case situation. The estimated level of service on 48th Avenue at Fulton Street would change from A to C.

G. NOISE

The noise generated by equipment used to construct the project would temporarily cause an increase in ambient noise levels adjacent to the project site. Additional traffic during operation of the project would generate a 7 dBA increase in the traffic noise levels along 48th Avenue between Balboa and Cabrillo streets.

H. ENERGY

Adding more than 650 dwelling units and 60,000 sq. ft. of commercial space in an area now using no energy would increase overall annual consumption of electricity and natural gas in San Francisco.

CHAPTER VII
ALTERNATIVES TO THE PROPOSED PROJECT

A. NO-PROJECT

If the proposed project were not constructed, the site would remain vacant, and none of the impacts associated with the project would occur. The MUNI bus turnarounds would remain in their current locations, and the visual appearance of this site would remain unchanged. In the absence of alternative development plans, potential public and private use of the project site would be delayed until another development proposal is made, approved, and constructed.

The primary effect of the no-project alternative would be to hold open future options for development of the site under existing commercial and residential zoning. Deferment of development could also allow time for the emergence of effective mechanisms to incorporate portions of the project site as public open space contiguous with the Golden Gate National Recreational Area.

B. NO DEVELOPMENT ON PARCEL FOUR

1. Land Use

No development on Parcel 4 would reduce the number of owner-occupied residential units of the proposed project to 353, a reduction of 200. Correspondingly, there would be a reduction of the overall density of the project area. There would be fewer dwelling units available within the City's housing stock. Parcel 4 would be available for partial or full acquisition of the GGNRA, or future commercial and residential development under current zoning or retention as open space by the project sponsor. If retained by the project sponsor as open space, present zoning would remain and the land area could be included in calculations of the number of dwelling units allowed in the PUD as a whole, with the total number proposed being allowable under the zoning. If Parcel 4 were purchased, present zoning of Parcels 1, 2 and 3 would not permit the number of units proposed in the location proposed. The number of units could be reduced, buildings could be redesigned to place more units on the western half of Parcel 3, or a rezoning of the RH-2 districts would be necessary.

If Parcel 4 were not developed, a potential conflict with construction of the Richmond Transport sewer tunnel would be avoided.

2. Community Characteristics

The absence of 200 units would lower the project's projected population to about 875 people. The density averaged over the remaining area would more closely approximate the allowed density in the surrounding blocks. The expected senior population and the anticipated age groups of prospective residents would be the same as for the proposed project.

3. Visual Quality

The absence of housing on Parcel 4 would reduce the extent of rooftop area to be seen from Sutro Heights Park, and other residential structures located on higher ground surrounding the project area. The steep, south-facing slopes of Sutro Heights Park would remain visible from the Great Highway. Concrete foundations and existing debris on Parcel 4 would remain unless removed by another agency (such as the National Park Service) which might acquire the parcel in the future.

4. Topography, Soils

Under this alternative, grading of the highly erosive and unstable gullied slope on the north end of the parcel would not be required, and the potential for increased erosion would be avoided. No erosion control measures would be required to protect downslope housing from sediment buildup.

5. Hydrology

The amount of surface runoff to enter the combined storm sewer drains would decrease due to the increased permeable surfaces of Parcel 4. There would be less wet-weather flow to be treated by the future Southwest Treatment Plant, and less stormwater discharge currently directed to the Pacific Ocean. Drainage facilities required for the project would not be as extensive under this alternative, as surface runoff would not collect behind building walls on up-slope areas.

6. Vegetation

If Parcel 4 is not developed, there would be no direct loss of the dune tansy population. However, development of the other three parcels would still result in additional people in the area, increasing the potential for disturbance of dune bluff and dune meadow vegetation.[1]

7. Transportation

No development on Parcel 4 would generate an estimated 18% fewer transit trips and 13% fewer vehicle trips than the proposed project. As this alternative would exclude condominiums from the project, and condominiums would have a higher transit modal split than other project land uses (such as the commercial), transit trips would be reduced proportionately more than vehicle trips.

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[1] Based on conversations with Nancy Stone, Park Technician, and David Rung, Supervising Park Technician, U.S. National Park Service, 17 November 1978.

Transit use generated during the evening peak hour would be about 25% less than the proposed project, at 175 trips compared to 235 trips. Of these, 115 would be inbound to the project and 60 outbound from the project. Evening peak hour vehicle trips generated would be about 290 inbound and 200 outbound, for a total of 490 trips. This would be 13% fewer than the 560 evening peak hour trips generated by the proposed project.

The impact of this alternative on the surrounding street network would be to reduce trips by about 10% to 15% compared to the proposed project. On individual streets the additional traffic would be about 15% less than the proposed project on Balboa between the Great Highway and 48th Avenue, on Point Lobos Avenue and on the Great Highway between Balboa and Fulton. Traffic would be about 10% less on 48th Avenue and on the Great Highway south of Fulton.

8. Air Quality

The impact to air quality would be reduced in proportion to the decrease in traffic generated if Parcel 4 were not developed.

9. Noise

Construction noise and traffic-generated noise would be the same for this alternative as for the proposed project.

10. Community Services

This alternative would need less water pressure to serve the project site for domestic use and fire protection. (Higher pressure would be needed to service Parcel 4 because the proposed full development would be well above existing mains and would require additional pressure to overcome the height difference.)

Regardless, it is likely that the project sponsor would be required to pay for the installation of new water mains.

11. Economics

No development of Parcel 4 would mean less demand for City municipal services in terms of police and fire protection, water, and street maintenances and cleaning. Annual property tax revenues to the City would be approximately $345,000. Commercial sales and payroll taxes would remain the same as for the proposed project, bringing the total annual tax revenue to $453,000, about $225,000 less than for the proposed project. Sales tax for the condominium units would be about $800,000.

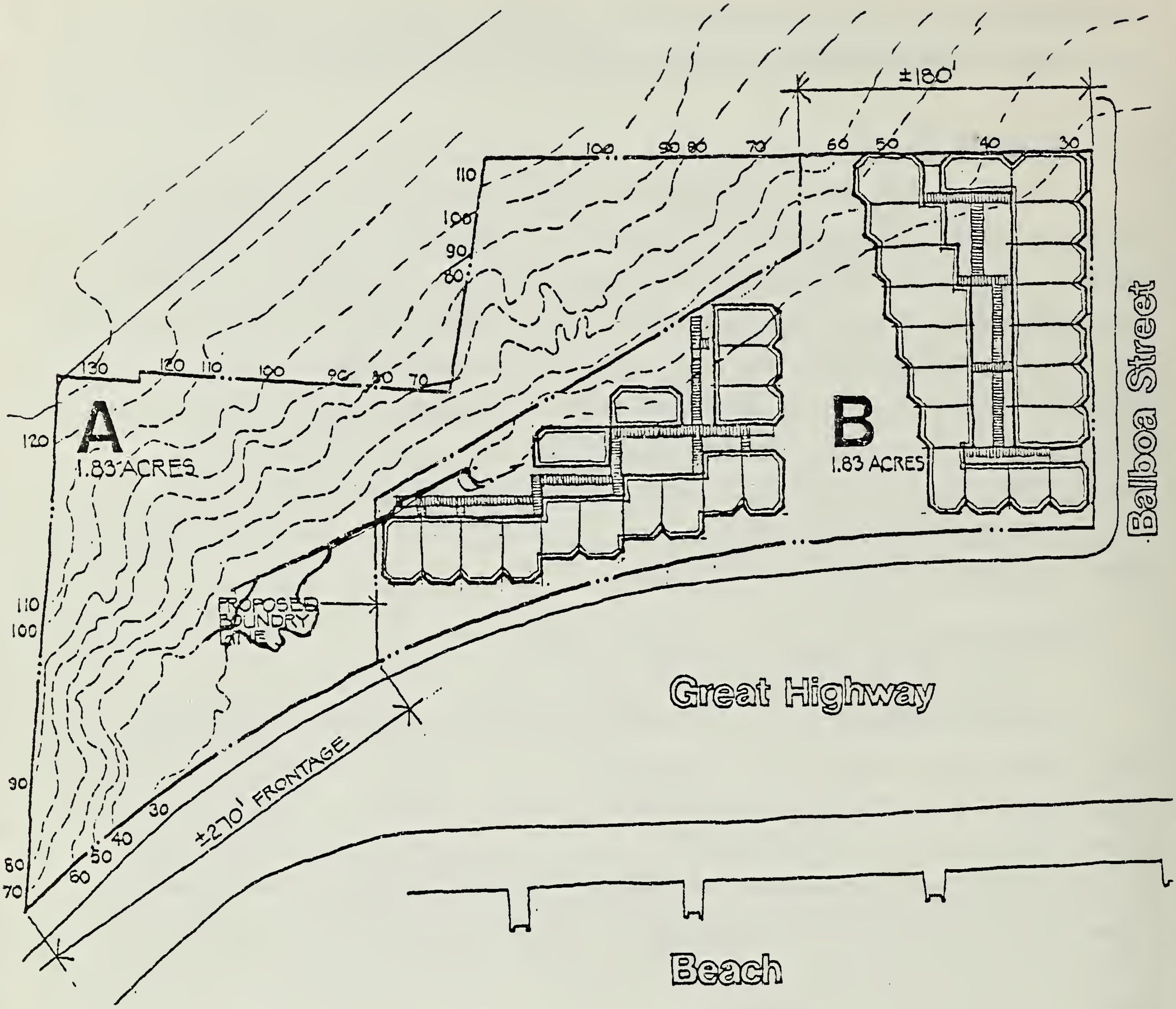
Permanent employment for this alternative would be the same as for the proposed project.

C. PARTIAL DEVELOPMENT ON PARCEL FOUR

In November of 1978, President Carter signed the Omnibus Parks bill that would incorporate 1.9 acres of Parcel 4 into the Golden Gate National Recreation Area (GGNRA). This alternative provides for development of 127 condominium units on the flat portion of Parcel 4, assuming the hillside portion remained open space (Figure 25, page 158). The reductions in impacts would be as described in Section VII.B., No Development on Parcel 4, except as follows:

1. Land Use

This alternative would reduce the number of condominium units of the proposed project to 480, a reduction of 73. If the project sponsor retained ownership of the hillside area of Parcel 4 and included it in the PUD as open space, present zoning would allow the number of units proposed in the configuration proposed. If the 1.9-acre hillside were purchased, the number of units



Parcel 4 - Partial Development

0 20 40 80
Scale Feet

North

Figure No.25

proposed for RH-2 districts in the PUD would be about 30 more than allowed. The units would need to be eliminated, moved to C-1 districts, or a zoning reclassification would be required before the project could be approved. A potential conflict with the construction of the Richmond Transport tunnel would remain.

2. Community Characteristics

There would be a reduction in the project population from an estimated 1,300 to 1,140. The anticipated age groups of prospective residents would be the same as for the proposed project.

3. Visual Quality

Rooftop areas of Parcel 4 would be seen from Sutro Heights Park and other residential structures located on higher ground surrounding the project area. The steep, south-facing slopes of Sutro Heights would remain visible from the Great Highway as shown in Figure 26. The site would be cleared of existing debris.

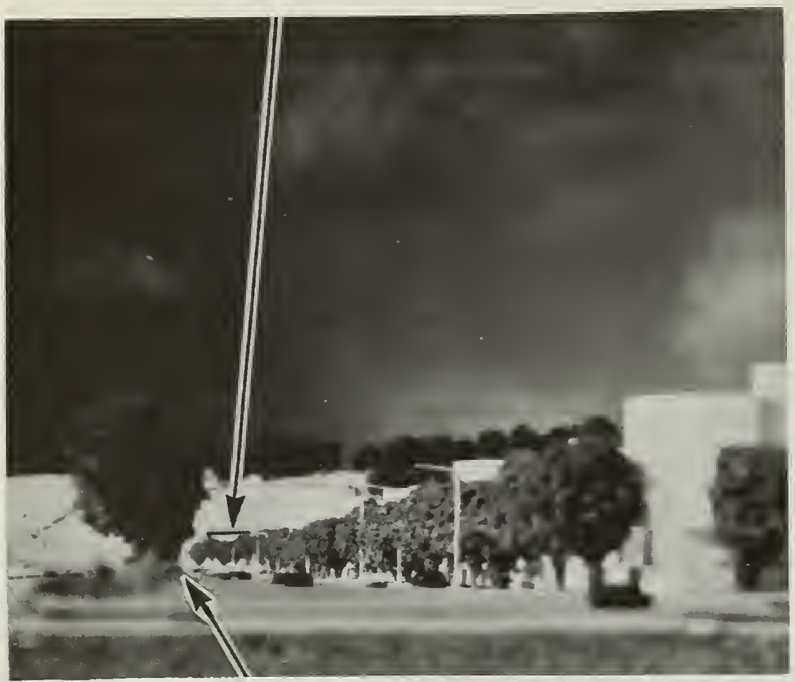
4. Topography, Soils

As construction would be avoided on the sloped portions of Parcel 4 (except at the toe of the slope), there would be little potential for new slope erosion. A major revegetation program to stabilize slopes would not be required.

5. Vegetation

This alternative would avoid the direct loss of a portion of the dune tansy population on the dune bluff. However, increased human activity from the project would result in use of the trail system through the dune meadow similar to that of the proposed project and would require measures to protect the dune tansy population from being trampled or removed.

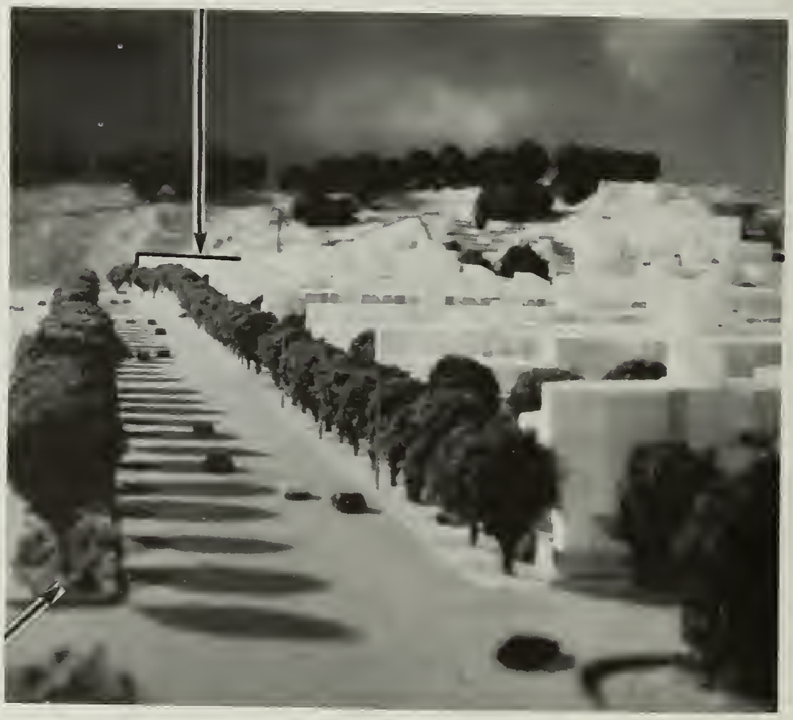
Top of Building on Parcel 4



Note that a center island with trees in Great Highway is indicated.

1. View of project at eye level, as seen from Great Highway

Top of Building on Parcel 4



Center Island with Trees

2. View of project as seen from elevated position.

Project Model Photographs (Partial Development on Parcel 4)

Figure No.26

6. Transportation

Partial development of Parcel 4 would generate an estimated 9% fewer transit trips and 7% fewer vehicle trips than the proposed project. Evening peak hour transit trips would be about 11%-13% lower than the proposed project, and evening peak hour vehicle trips generated would be about 5%-7% lower. An estimated 205 total transit trips would be generated by the partial development alternative during the peak hour, of which 135 would be inbound to the project and 70 would be outbound. A total of 525 peak hour vehicle trips would be generated, 312 inbound and 213 outbound.

The impact of vehicular traffic on the surrounding road network would be 5% to 8% lower than the impacts for the proposed project discussed in Section IV.I.

Under this project alternative, traffic during the evening peak hour would not change by more than 10% from that estimated for full development. Additional evening peak hour traffic on 48th Avenue, on the Great Highway south of Fulton, and on Fulton east of 47th Avenue would be about 5% less than additional traffic due to the proposed full development. On Balboa between the Great Highway and 48th Avenue, and on Point Lobos, evening peak hour traffic would be about 8% less.

The proposed parking provision for the partial development of Parcel 4 would be one space per dwelling unit, the same ratio as would be provided with full development of Parcel 4. There would be no garage access to the Great Highway from Parcel 4, the only access being via an entrance/exit from Balboa Street. Parking provision on the other three parcels would remain as for the proposed project.

7. Economics

Tax revenue to the City would be about $485,000 in annual property taxes. Commercial sales and payroll taxes would remain the same as for the proposed project, bringing the total annual tax revenue to $595,000, about $85,000 less than for the proposed project. Sales taxes for the condominium units would be $1.1 million (1985 dollars).

Permanent employment for this alternative would be the same as for the proposed project.

D. NO CLOSURE OF LA PLAYA STREET

1. Land Use

If La Playa Street were not closed to private automobile traffic between Cabrillo and Balboa Streets, the proposed pedestrian and transit mall would be excluded from the project. Access to the commercial and recreation facilities on Parcel 1 would be restricted to sidewalk building entries. Pedestrian cross-traffic between Parcels 1 and 2 would be via designated crosswalks at La Playa and Cabrillo Streets and at La Playa and Balboa.

2. Transportation

If La Playa Street were not closed to private automobile traffic as a part of the project, the estimated trips generated by the project would be unchanged. The vehicular impact of the project on 48th Avenue between Balboa and Cabrillo Streets would, however, be reduced by at least 55%, as traffic would not be diverted from the parallel section of La Playa Street.

The overall impact of traffic due to the project on the roads in the immediate vicinity of the site would depend on the individual route choices of drivers through the local road network. Assuming traffic from Parcel 1 would use 48th Avenue as an access route to Fulton and Cabrillo Streets[1] and that traffic from Parcels 3 and 4 would use La Playa Street, the additional traffic that would use 48th Avenue between Balboa and Cabrillo Streets during the evening peak hour would be about 70% less if La Playa Street were not closed. An estimated additional 42 vehicles would use 48th Avenue during the peak hour compared to an estimated 140 additional vehicles under the original project design. The number of project vehicles using 48th Avenue south of Cabrillo Street would be about 20% less if La Playa Street were not closed.

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[1] Also assumed in impact analysis of proposed project.

Using these same assumptions, the 120 vehicles that would use La Playa Street between Balboa and Cabrillo Streets during the evening peak without the project would be increased by about 21%, to 145 vehicles with the project.

Additional evening peak hour traffic using Balboa Street between La Playa Street and 48th Avenue would be up to 25% less than if La Playa Street were closed to private vehicles.

The traffic impact on the remaining roads in the area would be similar to the impact discussed for the proposed project.

MUNI would foresee no operational problems with the proposed turnaround at La Playa and Cabrillo Streets, if La Playa Street were not closed as part of the project.[1] The dimensions of the turnaround and the 46 feet of road width available on La Playa would be sufficient for buses to exit and wait at Cabrillo to turn left without blocking the northbound lane of La Playa at the turnaround.

The potential for conflict between buses, cars, and pedestrians at La Playa and Cabrillo would be higher than if La Playa Street were closed to automobile traffic.

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[1] John McKane, MUNI Planner, telephone conversation, October 1977.

3. Noise

If La Playa Street were open to through traffic, the project would be exposed to increased traffic noise; the increase might cause the units facing La Playa to require architectural mitigation measures (such as acoustical glazing and forced air ventilation) to meet the State Noise Insulation Standards (see Section V.I., page 146).

Forty-eighth Avenue between Cabrillo and Balboa Streets would experience only a 3-dBA increase in traffic-generated noise rather than a 7-dBA increase if the project were constructed as proposed. Other noise effects would remain the same as discussed in Section IV., Impacts.

E. NO MUNI LAND EXCHANGE

1. Land Use

Dwelling units proposed for the portion of Parcel 3 now owned by MUNI could not be built if a land exchange were not approved. The recreation facilities above the new turnaround site could remain, with additional neighborhood retail space or dwelling units on the ground level. If the exchange did not occur, the entire project might be redesigned.

2. Transportation

If the land exchange necessary for the proposed MUNI bus turnaround were not approved by the PUC, MUNI would maintain operation of both existing bus turnarounds in the area. This would be necessary to maintain the existing space for waiting buses on Routes 38 (or 31) and 5. The northernmost condominium building on Parcel 3 could not be constructed as proposed by the developer, and would be reduced by about 30 units. Some of these units could be relocated to the proposed new turnaround site to the south of Parcel 1. The overall trips generated by the project could thus be reduced, although the reduction would be within the margin of error of the trip generation estimates for the project as a whole. The impact of the project on the road network without the new turnaround would thus be identical to the proposed project.

The transit improvements offered by the proposed new turnaround through the consolidation of terminus facilities would not be achieved without the land exchange. No shelter would be provided to waiting transit passengers by the project sponsor, the park-like atmosphere at the end of Cabrillo Street would be lost and access to the commercial area on Parcel 1 would be via the existing bus turnaround rather than via the pedestrian area provided by the project. Users of the 38 (or 31) bus would be one block closer to Ocean Beach at the existing turnaround.

The 5-Fulton electricl buses would have to travel through the pedestrianized section of La Playa Street to reach the turnaround at Balboa, which would increase the number of buses using this section of La Playa Street to about 33 during the evening peak and about 25 during the midday period. Corresponding numbers with the new turnaround proposed by the project would be 9 and 8 buses, respectively.

3. Noise

Retaining both existing MUNI turnarounds would increase the noise impact generated by diesel-powered buses traveling on La Playa and accelerating adjacent to the proposed housing units. Nighttime bus operations combined with traffic noise from the Great Highway are likely to render the majority of the project site exterior incompatible with the standards of the Transportation Noise section of the Environmental Protection Element of the Comprehensive Plan.

Mitigation measures, such as acoustical glazing and forced air ventilation, would be necessary for the majority of the housing units to comply with the interior noise limits of the State Noise Insulation Standards.

F. OTHER SITE USES

No specific alternative site uses have been proposed by the developer. The following conceptual alternatives are presented to illustrate other possible uses of the site.

1. Residential

An alternative site use could involve lot-by-lot development of residential units in conformance with existing zoning. A maximum of approximately 450 units would be allowed if the blocks were divided into lots of a size allowed by the Planning Code. This alternative would eliminate the possibility that the four-block area be designed and developed as a single coordinated residential project. The public open space of the proposed project would be lost under parcel-by-parcel development. The economic viability of this alternative is unknown.

2. Commercial

Commercial development of the project site would likely cater to tourists and recreationists using the beach and nearby parklands, including the GGNRA. Commercial development possibilities which have been mentioned include a recreational vehicle park, skate board park and ice skating rink. A zone change would be required to allow such uses. Other possible commercial facilities could include restaurants, retail shops, and bicycle rentals.

3. Open Space

Development of the site as open space parkland would allow for physical linking of Golden Gate Park to Sutro Heights Park. Under this alternative, an organization such as the Coastal Conservancy or a private group could purchase the land through fund-raising activities or a governmental agency could purchase the land with tax funds, and increase the recreation opportunities available to the public in San Francisco. As open space parkland the project site greatly improves public access between Ocean Beach and adjacent parkland areas. The economic viability of such an alternative is unknown.

4. Mixed Use in Conformance with Existing Zoning

Another possible alternative would involve development of neighborhood-oriented commercial facilities on the portions of the site zoned C-1 and lot-by-lot residential development on the portions zoned RM-1 and RH-2. A maximum of about 180 residential units would be allowed. A variation for the C-1 zoned portion of the site would be to develop commercial uses on the ground floor with residences on the upper floors. This variation could increase the maximum number of allowed residential units to about 450.

CHAPTER VIII
THE RELATIONSHIP BETWEEN THE LOCAL SHORT-TERM USE OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

For many years, the project site has been relatively unproductive, both economically and ecologically. THe proposed project would alter this situation by increasing the economic productivity of the site, and by incorporating new landscape additions. The long-term productivity of the dune bluff plant communities, particularly the dune tansy, could be adversely affected on Parcel 4 if appropriate mitigation measures are not incorporated into the project.

The project would involve a long-term use of the site, and during this time period, other beneficial uses such as open space or park development would be precluded.

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CHAPTER XI
BIBLIOGRAPHY

Association of Bay Area Governments. Draft Environmental Management Plan. December 1977.

__________. "Status of Existing Landfill Sites." n.d.

Bay Area Air Pollution Control District. "Contaminant and Weather Summary." December 1977.

__________. Emissions Inventory Summary Report. August 1976.

__________. Guidelines for Air Quality Impact Analysis of Projects. Technical Services Division Information Bulletin. 1 June 1975. Updated by ABAG memorandum regarding "Modifications to Baseline Emissions Inventory due to EPA's Supplement 8," Ron Wada to Mike Kim, 18 July 1977.

California Department of Parks and Recreation. "Map Recreation Time Zones from San Francisco-Oakland and San Jose Metropolitan Complex, 1975-1980." n.d.

California Administrative Code. "Noise Insulation Standards." Title 25, ch. 1, sub. 1, art. 4. 1974.

California Solid Waste Management Board. "Solid Waste Generation Factors in California." Technical Information Series Bulletin No. 2. 8 July 1974.

Chow, V. T. Handbook of Applied Geology. New York: McGraw-Hill, 1974.

City and County of San Francisco. Municipal Code. Article 29, "Regulation of Noise."

City and County of San Francisco. Department of City Planning. The Comprehensive Plan: Transportation. 1972.

__________. Draft EIR, West Side Transport/Storage Project, May 1977.

__________. "Endangered Plant Locations in San Francisco." n.d.

__________. Final Environmental Impact Report: Golden Gate Heights Residential Development. 3 July 1975

__________. "Guidelines for Development, Playland-at-the-Beach Site." Draft, 5 August 1977.

__________. "The Plan for Transportation Noise Control." In Environmental Protection Element. 1974.

__________. Recreation and Open Space Plan. 1973.

__________. Transportation: Conditions and Trends. August 1976.

City and County of San Francisco. Mayor's Office of Community Development. Community Development Program and Housing Assistance Plan for 1978. November 1977.

Garcia, A. W. and J. R. Honston. Tsunami Predictions for Monterey and San Francisco Bays and Puget Sound. U. S. Army Corps of Engineers Technical Report H75-17. 1975.

Greensfelder, R. W. "Maximum Credible Rock Acceleration from Earthquakes in California." California Division of Mines and Geology, Map Sheet 23. 1974.

Gruen Gruen + Associates. "Analysis of the Economic Impacts of the Proposed Change in San Francisco Zoning." 17 December 1976.

Kaufeldt, Carlos. "Observations on San Francisco's Last Major Sand Dune, with Notes on Its Flora and Insect Fauna." Wasmann Journal of Biology, Vol. 12 (1954).

Lee and Praszker, Consulting Engineers. "Report on Soil & Foundation Investigations, Seal Rock Development..." 6 December 1972.

Munz, P. A. A California Flora. Berkeley: University of California Press, 1970.

Ocean Beach Associates. Marketing Survey (unpublished). August 1978.

Michael Painter & Associates. "Redesign Plan for the Great Highway." 1977.

Planning Association for the Richmond. "Richmond District Improvement Plan: 1972 Policies concerning Cultural Pluralism and Integration, Residential Plan." 1972.

Powell, W. Robert. Inventory of Rare and Endangered Vascular Plants of California. 1974.

Ritter, J. R. and W. R. Dupre. "Map Showing Areas of Potential Inundation by Tsunamis in the San Francisco Bay Region, California." U. S. Geological Survey, San Francisco Bay Region Environment and Resources Planning Study, Basic Data Contribution 52. 1972.

Schlocker, J. Geology of the San Francisco North Quadrangle, California. U. S. Geological Survey Paper no. 782. 1974.

URS/John A. Blume & Associates. San Francisco Seismic Safety Investigation. June 1974.

U. S. Department of the Interior. Golden Gate National Recreation Area, Point Reyes National Seashore: Assessment of Alternatives for the General Management Plan. May 1977.

Wilbur Smith & Associates. San Francisco MUNI Transportation Planning, Operations, and Marketing. June 1977.

APPENDICES

A. TRAFFIC ANALYSIS

B. NOISE ANALYSIS

C. MICROCLIMATE ANALYSIS

APPENDIX A

TRAFFIC ANALYSIS

1. Existing Traffic Conditions

Existing traffic conditions in the area were identified from City of San Francisco count data (27 January 1977), and traffic counts conducted by Alan M. Voohees and Associates in January 1977 and July 1978. Both 1977 data sources were updated on the basis of the July 1978 counts conducted for this study. Average daily traffic (ADT) on the local/distributor roads was estimated from peak counts assuming that the peak hour constructed 12%[1] of ADT. Flows on Cabrillo and Fulton, east of 48th Avenue were estimated by a block-by-block interpolation from counts at 48th Avenue and at 25th Avenue.[2]

2. Details of Project Traffic Generation Estimates

The proposed project site would be in an urban area serviced with above average transit connections, particularly to the major employment center of downtown San Francisco.

It was thus necessary to base trip generation estimates for the proposed project on person trip generation rates and then split the total person trips[3] that would be generated by the project into transit and automobile trips. This approach required the estimation of modal split[4] parameters and automobile occupancy factors.

Table A-1 shows the base vehicle trip generation rates[3] and vehicle occupancy factors used to determine the person trip rates applicable to each land use category of the proposed project.

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[1] Based on residential trip generation rate data. Sources: Institute of Traffic Engineers, "Trip Generation, 1976," and CalTrans, "10th Program Report on Trip Ends Generation Research Counts, July 1975."

[2] City of San Francisco Traffic Counts, December 1975.

[3] Person trips relate to people as the travel unit, vehicle trips relate to vehicles as the travel unit. At a vehicle occupancy of 1.0 (1 person per vehicle), person vehicle trips are equivalent. Generally, vehicle occupancy is higher than 1.0, so a given number of person trips would translate to a lesser number of vehicle trips.

[4] Modal split: the proportion of trips using transit.

Level of Trip Making Internal to the Project

The developer proposes that the recreational facilities within the project would be oriented toward local use and would be open only to project residents and local Richmond area residents. A total membership of about 1,000 families is planned by the developer, of which 50% would be from the project itself.

The commercial facilities would also be oriented primarily toward locas use, although because of the geographical location they would also offer a more regional service in that facilities would be provided for beach users and recreational trips to the general area. Due to the relatively small size however, it is not expected that the commercial facilities would be a major regional recreational trip attractor.

As the proposed project would be adjacent to the existing Safeway store on La Playa between Cabrillo and Fulton Streets, it may be expected that some shopping trips by project residents would be satisfied by this facility. Some existing Safeway users may also extend their trip to the commercial facilities offered by the proposed project.

No data is available as to the level of internal trips that would be made within the area of the project (i.e., the proposed project, Safeway, and the beach). For the purposes of this analysis, it was assumed that 40% of the retail trips generated by the project would be made from within the project area. This 40% would include both project residents and people already using the existing Safeway and beach facilities.[1] Similarly, it was assumed that 20% of the restaurant trips and 60% of the recreational trips would be made from the project area. Trips generated by the condominimums and senior citizen apartments were reduced by 15% to allow for project residents using the existing Safeway store and the commercial and recreational facilities of the proposed project.

The net effect of these assumptions was to reduce the average daily traffic (ADT) expected to be generated by the project by

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[1] This percentage was developed from professional judgment based on various trip generation sources for residential, retail and recreational beach facilities (See Footnote 1, Table A-1).

Table A-1

Derivation of Person Trip Generation Rates

Land Use	Size	Base Trip Generation Rate[1/] (vehicles)	Vehicle Occupancy[1/]	Person Trip Rate
Condominiums	574 D.U.	6.0/D.U.	1.25	7.5/D.U.
Sr. Citizen Apartments	101 D.U.	4.0/D.U.	1.25	5.0/D.U.
Retail	45,000 SF	80.0/1000 SF	1.30	104.0/1000 SF
Restaurant	15,000 SF	100.0/1000 SF	1.70	170/1000 SF
Recreational	4 courts	35.0/court	1.50	52.5/court

[1/] Sources: Institute of Traffic Engineers, Trip Generation, 1976. Caltrans Progress Reports on Trip Ends Generation Research Counts: Studies 95, 153, 205, 210, 218, 219, 252, 253, 263, 264, 265, 266.

about 25%. While the proportion of internal trips within the project area could be higher than this--particularly if local Richmond residents walk or bicycle to the project retail facilities, or the project commercial facilities attract a higher proportion of trips from residents, existing Safeway shoppers, and beach users--the assumptions made were conservative in order to assess the worst-case traffic generation impact of the project.

Modal Split Assumptions

Modal split percentages were derived as follows. The results of the MUNI On-Board Survey[1] undertaken in 1975, indicate a transit trip generation rate of 0.71 or more home-based trip ends per capita for the West Richmond area. Assuming a rate of 0.75 and an average household size for the proposed project of 2.1 (slightly below the average owner-occupied household size in the area of 2.3 recorded in the 1975 Sample Census[2]) yields 1.58 home-based transit trips per unit, or about 907 transit trips generated from the condominiums of the proposed project. This is equal to 21% of the 4,305 total person trips estimated to be generated from the condominiums. It was therefore assumed that 20% of average daily trips from the condominiums would travel by transit.

No data are available to allow similar procedures to be adopted in estimating modal split for the three remaining land uses. As senior citizens generally experience lower than average car ownership levels, it was assumed that 40% of daily trips generated from the senior citizen apartments would travel by transit. Modal percentages of 10% for commercial generated trips and 20% for recreational generated trips were assumed.

The following table summarizes the modal percentages assumed in the trip generation estimates. With the exception of condominiums, it has been assumed that the percentage using transit remains constant between the peak hour and the whole day. The condominiums, however, would generate a certain proportion of work trips and modal split is traditionally higher for work trips than for any other trip purposes.

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[1] MUNI: On-Board Survey Summary of Results, Wilbur Smith & Associates, 1976.

[2] U.S. Department of Commerce, Bureau of Census, Special Census of Housing in San Francisco and SMSA, 1977, unpublished.

	Assumed % of motorized trips by transit	
Land Use Type	24-hour	Peak hour
Condominiums	20%	40%
Sr. Citizen Apartments	40%	40%
Commercial	10%	10%
Recreational	20%	20%

The 1970 Census indicates that 43% of motorized work trips from the general area of the proposed project site were made on public transit.[1] (See also Table 4). As not all peak-hour trips are work trips, it was assumed that 40% of peak-hour trips generated from the condominiums would use transit.

Due to the necessity of deriving transit trip and total trip generation rates from independent sources, the lack of precise modal split data for the Richmond area, and for the project specifically, introduces an element of uncertainty into the transit trip forecasts for the project.

A daily 20% and peak-hour 40% transit split of condominium generated trips represents a high level of overall transit ridership that would be appropriate to the above-average transit service provision to the project site (particularly when it is considered that these percentages are for travel to all trip destinations, not just downtown San Francisco). However, in view of the element of uncertainty, and also in view of the transit route improvements to the Richmond area contained in the MUNI Five-Year Plan, a sensitivity analysis of transit impacts has been included which assumes a 25% daily transit split from the condominiums, with a corresponding split during the peak hour of about 45%-50%. This "higher transit ridership" scenario represents 25% more transit riders from the project than projected in Table A-2 and is detailed under project traffic generation.

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[1] 1970 Census of Population and Housing, San Francisco-Oakland Standard Metropolitan Statistical Area. Census Tract 0479.

Vehicle Occupancy Assumptions

The remaining person trips would thus be automobile trips and need to be reduced to vehicle trips by the application of vehicle occupancy factors. An average vehicle occupancy of 1.5 was assumed[1] for daily trips, for all land use types except commercial, for which a factor of 1.3 was applied, and restaurant trips, for which an occupancy of 1.7 was used. Vehicle occupancy was assumed to be the same during the peak-hour as throughout the day, with the exception of trips generated from the condominiums. The 1970 Census indicated an average vehicle occupancy for work trips of 1.15 for the area in which the proposed project would be located. Vehicle occupancies are generally lower for work trips than for any other trip purpose.[2] As not all peak-hour trips generated by the condominiums would be work trips, a vehicle occupancy of 1.2 was assumed for peak-hour trips generated from the condominiums.

Project Traffic Generation

Table A-2 summarizes the estimated number of trips that would be generated by the project. The numbers shown in the table account for the internal trip-making assumptions and thus represent additional trips that would be added to the road network as a result of the proposed project.

The trip generation estimates are based on approximate size projections of project elements. While the final project parameters may change slightly, they would not be expected to alter the overall trip generation estimates for the project by more than ±10%, i.e., within the margin of error of the trip projections summarized in Table A-2. Although the proposed square footage of commercial and restaurant space changed after most of the traffic estimates were developed, the overall trip generation estimates remain within the margin of error of the projections in Table A-2. The trips added due to the increase in commercial space were offset by the trips subtracted due to the decrease in restaurant area.

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[1] Transportation and Traffic Engineering Handbook, Institute of Transportation Engineers, 1976. Note that the vehicle occupancy assumed for the final estimation of residential trip generation from the project is higher than the occupancies assumed in the derivation of the residential person trip rates shown in Table A-1. This is because the base trip generation rates and vehicle occupancies were derived from CalTrans trip generation studies which are generally for suburban areas. The proposed project would, however, be in an urban area where car ownership is generally lower than suburban areas, and thus vehicle occupancy is higher.

[2] Ibid.

TABLE A-2

Traffic Generation of the Proposed Project

			Average Daily Trips Generated			Peak Hour Trips Generated[9]							
						Transit[6]				Auto (Vehicles)[7]			
						A.M.		P.M.		A.M.		P.M.	
Land Use	Size[8]	Person Trip Rate[1]	Total Person Trips	By Public Transit[6]	By Auto (Vehicles)[7]	In	Out	In	Out	In	Out	In	Out
Condominiums	574 D.U.	7.5/D.U.	3,660[2]	735	1,955	29	102	110	51	37	128	138	64
Sr. Citizen Apartments	101 D.U.	5.0/D.U.	430[2]	175	175	4	16	14	7	5	17	13	7
Retail	45,000 SF	104/1000SF	2,810[3]	280	1,945	6	6	17	17	39	39	117	117
Restaurant	15,000 SF	170/1000SF	2,040[4]	205	1,080	-	2	12	6	4	7	65	33
Recreational	4 courts	52.5/court	85[5]	15	45	-	-	-	-	-	-	3	3
Total			9,025	1,410	5,200	40	125	155	80	85	190	335	225

[1] See Table 1, Appendix C for derivation of person trip rates.

[2] Assuming 15% of trips to destinations within project area, and therefore made on foot (i.e., project, Safeway and beach).

[3] Assuming 40% of trips from within project area.

[4] Assuming 20% of trips from within project area.

[5] Assuming 60% of trips from within project area.

[6] See page 188 for modal split assumptions.

[7] See page 190 for vehicle occupancy assumptions.

[8] Approximate size; D.U = dwelling units; SF = square feet.

[9] A.M. peak, 7:30-8:30; P.M. peak, 5-6.

TABLE A-3

Traffic Generation of the Proposed Project by Development Parcel

Parcel No.	Land Use	Average Daily Transit Trips	Average Daily Auto Trips	P.M. Peak Transit Trips	P.M. Peak Auto Trips
1	Sr. Citizen Apartments	172	172	21	20
	Retail	281	1,945	34	234
	Restaurant	204	1,080	18	98
	Recreational	17	45	--	6
	Subtotal	674	3,242	73	358
2	Condominiums	212	566	46	59
3	Condominiums	264	703	58	73
4	Condominiums	256	683	57	70
Total		1,410	5,200	235	560

It is estimated that the proposed project would generate an additional 9,025 average daily motorized person trips in the area, of which 1,410 trips, about 16%, would be made by transit. The project would generate an estimated 5,200 average daily automobile vehicle trips.

About 52% of the total daily transit trips would be generated by the condiminiums, 35% from the commercial facilities, 12% from the senior citizen apartments, and the remaining 1% by the recreational club. Of the automobile vehicle trips generated by the project, about 38% would be generated from the condominiums, 58% from the commercial facilities, 3% from the senior citizen apartments, and the remaining 1% from the recreational club.

During the morning peak hour (around 7:30 - 8:30 a.m.), 165 transit trips and 275 vehicle trips would be generated by the project. Traffic generated during the evening peak hour (5 - 6 p.m.) would be higher due to higher evening peaking characteristics of all the proposed project land uses. An estimated 235 transit trips and 560 vehicle trips would be generated by the project during the evening hour. About 30% of evening peak-hour trips generated by the project would use transit.

Under the "higher transit ridership" scenario detailed earlier, the project would generate about 1,590 daily transit trips (compared to 1,410), with 275 (compared to 235) transit trips occuring during the evening peak hour.

Table A-3 shows the estimated project traffic generation by development parcel. Parcel 1, containing the commercial and recreational facilities and the senior citizen apartments, would be the highest trip generator, with an estimated 674 daily transit trips and 3,242 daily vehicle trips. These trips would represent 48% and 62%, respectively, of the total daily transit and vehicle trips generated by the project. The remaining three parcels, all condominium development, would each generate between 212 and 256 daily transit trips, about 15%-19% of the daily project total, and between 566 and 703 daily vehicle trips, about 11%-14% of the daily project total.

Parcel 1 would also be the highest traffic generator during the evening peak-hour with 73 transit trips, or about 31% of the peak-hour total, and 358 vehicle trips, accounting for about 64% of peak-hour vehicle trips generated by the project.

On an average Sunday the project would generate an estimated 7,194 additional daily person-trips, or about 80% of the average weekday trips generated. Although rather more trips would be generated from the condominiums than during the week, the number of additional trips generated by the retail facilities would be lower on Sundays. The project would generate an estimated 1,006 transit trips and 4,098 vehicle trips on a Sunday. The peak-hour would occur between about 4 and 5 p.m., when an estimated 102 transit trips and 408 vehicle trips would be generated. These would represent about 44% and 73%, respectively, of the transit and vehicle trips generated by the project during the weekday evening peak-hour.

3. Distribution of Project Traffic

The following distribution of project-generated traffic was assumed, based on a consideration of existing traffic distribution over the road network, on the 1970 Census work trip destinations reported for the West Richmond area, (see Table A-4) and on major trip generators/attractors in the San Francisco Region.

Point Lobos Avenue	25%
47th Avenue (to Geary)	12.5%
46th Avenue (to Geary)	7.5%
45th Avenue (to Geary)	5%
Balboa Street	7%
Cabrillo Street	3%
Fulton Street	20%
Great Highway (south of Fulton)	20%

The estimated number of trips generated by the project were assigned to the road network by individual development parcel, assuming the distribution pattern listed above for each parcel. It was further assumed that traffic destined to the thoroughfares of Fulton Street, the Great Highway, and Geary Street, would attempt to join those streets as close to the project site as possible. The resulting distribution of project-generated traffic may thus be considered as a worst-case situation in the immediate vicinity of the project site.

Table 5 summarizes ADT and evening peak-hour traffic on the principal access roads to the site with and without the project.

TABLE A-4

Means of Transportation to/from Work and Place of Work: Census Tract 479 Compared with City, 1970.

Mode of Transit	CT 479 %	City-wide %
Auto: Driver	46%	42%
Passenger	7%	7%
Transit	41%	35%
Walk	3%	11%
Other	3%	5%
	100%	100%
Place of Work		
SF: CBD	22%	26%
Rest of City	58%	55%
Oakland	1%	1%
Rest of Alameda County	1%	1%
San Mateo County	6%	5%
Contra Costa County	1%	-
Marin County	1%	-
Other	10%	12%
	100%	100%

Source: 1970 Census of Population and Housing, San Francisco-Oakland Standard Metropolitan Statistical Area.

Closure of La Playa Street

The redistribution of traffic due to the closure of La Playa Street could have a variety of impacts depending upon the origins and destinations of the diverted traffic. These origins and destinations are unknown. Under a worst-case assumption[1] the following diversions of traffic onto adjacent streets are estimated.

		Traffic Without Project		Diverted Traffic due to Closure of La Playa Street	
Street	Section	ADT	P.M. Peak	ADT	P.M. Peak
Balboa	Great Highway-La Playa	1,900	227	-250	-30
Balboa	La Playa-48th	1,400	171	+200	+25
48th Ave.	Balboa-Cabrillo	140	16	+640	+75
Cabrillo	La Playa-48th	700	82	+175	+20
La Playa	at Cabrillo	910	110	-250	-30
Fulton	at Great Hwy.	9,350	773	+250	+30
Great Hwy.	Balboa-Cabrillo	15,750	1,422	+250	+30

These estimated traffic diversions have been included in the project traffic impact estimates shown in Table A-2 and in Figures 18 and 19 in the main text.

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[1] Assuming about 50% of diverted traffic has either an origin or distination at the Safeway store at La Playa/Cabrillo, and that diverted traffic would principally use local roads.

TABLE A-5

Estimated Traffic Increases Due to Project - Principal Access Roads to Proposed Project Site

Street	Section	ADT Without Project	ADT Increase Due to Project	ADT With Project	P.M. Peak Without Project	P.M. Peak Increase Due to Project	P.M. Peak With Project
Point Lobos Avenue	North of Balboa	16,000	1,300	17,300	1,441	148	1,589
Great Highway	Fulton-Balboa	15,700	1,225	16,925	1,422	136	1,558
Great Highway	South of Fulton	21,500	1,040	22,540	2,713	113	2,826
Fulton St.	Great Hwy.-La Playa	9,350	735	10,085	1,209	87	1,296
Fulton St.	East of 47th Ave.	9,110	1,040	10,150	1,191	113	1,304
Balboa	East of 45th Ave.	2,530	360	2,890	303	41	344
Cabrillo	East of 45th Ave.	850	155	1,005	100	19	119
47th Ave.	North of Balboa	625	650	1,275	75	68	143
46th Ave.	North of Balboa	275	390	665	33	40	75
45th Ave.	North of Balboa	260	260	520	31	27	58

Office of Environmental Review
Department of City Planning

13 April 1977

Standard Definitions

TRAFFIC: LEVELS OF SERVICE*

Level of service A describes a condition of free flow, with low volumes and high speeds. Traffic density is low, with speeds controlled by driver desires, speed limits, and physical roadway conditions. There is little or no restriction in maneuverability due to the presence of other vehicles, and drivers can maintain their desired speeds with little or no delay.

Level of service B is in the zone of stable flow, with operating speeds beginning to be restricted somewhat by traffic conditions. Drivers still have reasonable freedom to select their speed and lane of operation. Reductions in speed are not unreasonable, with a low probability of traffic flow being restricted. The lower limit (lowest speed, highest volume) of this level of service has been associated with service volumes used in the design of rural highways.

Level of service C is still in the zone of stable flow, but speeds and maneuverability are more closely controlled by the higher volumes. Most of the drivers are restricted in their freedom to select their own speed, change lanes, or pass. A relatively satisfactory operating speed is still obtained, with service volumes perhaps suitable for urban design practice.

Level of service D approaches unstable flow, with tolerable operating speeds being maintained though considerably affected by changes in operating conditions. Fluctuations in volume and temporary restrictions to flow may cause substantial drops in operating speeds. Drivers have little freedom to maneuver, and comfort and convenience are low, but conditions can be tolerated for short periods of time.

Level of service E cannot be described by speed alone, but represents operations at even lower operating speeds than in level D, with volumes at or near the capacity of the highway. Flow is unstable, and there may be stoppages of momentary duration.

Level of service F describes forced flow operation at low speeds, where volumes are below capacity. These conditions usually result from queues of vehicles backing up from a restriction downstream. Speeds are reduced substantially and stoppages may occur for short or long periods of time because of the downstream congestion. In the extreme, both speed and volume can drop to zero.

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* Derived from: Highway Research Board, Highway Capacity Manual, Spec. Rpt. No. 87, 1965.

APPENDIX B

NOISE

APPENDIX B NOISE

Part I of this Appendix provides background information to aid in understanding the technical aspects of the noise sections. Part II discusses the noise measurement survey conducted for this report.

I. Fundamentals of Environmental Noise

Three dimensions of environmental noise are important in determining subjective response. These are:

1) the intensity or level of the sound;
2) the frequency spectrum of the sound;
3) the time-varying character of the sound.

Airborne sound is a rapid fluctuation of air pressure above and below atmospheric pressure. Sound levels are usually measured and expressed in decibels (dB), with 0 dB corresponding roughly to the threshold of hearing.

The "frequency" of a sound refers to the number of complete pressure fluctuations per second in the sound. The unit of measurement is the cycle per second (cps) or Hertz (Hz). Most of the sounds which we hear in the environment do not consist of a single frequency, but of a broad band of frequencies, differing in level. The quantitative expression of the frequency and level content of a sound is its sound spectrum. A sound spectrum for engineering purposes is typically described in terms of octave bands which separate the audible frequency range (for human beings, from about 20 to 20,000 Hz) into nine segments.

Many rating methods have been devised to permit comparisons of sounds having quite different spectra. Fortunately, the simplest method correlates with human response practically as well as the more complex methods (Parkin 1964, Hillquist 1967, Galloway et al 1969, Botsford 1969). This method consists of evaluating all of the content of a sound in accordance with a weighting that progressively and severely deemphasizes the importance of frequency components below 1000 Hz, with mild deemphasis above 5000 Hz. This type of frequency weighting reflects the fact that human hearing is less sensitive at low frequencies and extreme high frequencies than in the frequency midrange.

The weighting curve most often used is called "A" weighting, and the level so measured is called the "A-weighted sound level," or simply "A-level."

The A-level in decibels is expressed "dBA"; the appended letter "A" is a reminder of the particular kind of weighting used for the measurement. In practice, the A-level of a sound source is conveniently measured using a sound level meter that includes an electrical filter corresponding to the A-weighting curve. All U.S. and international standard sound level meters include such a filter. Typical A-levels measured in the environment and in industry are shown in Figure A-1.

Although the A-level may adequately describe environmental noise at any instant in time, the fact is that the community noise level varies continuously. Most environmental noise includes a conglomeration of distant noise sources which creates a relatively steady background noise in which no particular source is identifiable. These distant sources may include traffic, wind in trees, industrial activities, etc. These noise sources are relatively constant from moment to moment, but vary slowly from hour to hour as natural forces change or as human activity follows its daily cycle. Superimposed on this slowly varying background is a succession of identifiable noisy events of brief duration. These may include nearby activities or single vehicle passages, aircraft flyovers, etc., which cause the environmental noise level to vary from instant to instant.

To describe the time-varying character of environmental noise, the statistical noise descriptors L_{10}, L_{50}, and L_{90} are commonly used (Kittelson et al 1964, Griffiths et al 1968, Olson 1970, Scholes 1970, Gordon et al 1971). The L_{10}, as used in this report, is the A-weighted sound level equaled or exceeded during 10 percent of a stated time period. The L_{10} is considered a good measure of the "average peak" noise. The L_{50} is the A-weighted sound level that is equaled or exceeded 50 percent of a stated time period. The L_{50} represents the median sound level. The L_{90} is the A-weighted sound level equaled or exceeded during 90 percent of a stated time period. The L_{90} is used to describe the background noise.

	Decibels A-Weighted	
CIVIL DEFENSE SIREN (100')	140)	THRESHOLD OF PAIN
JET TAKEOFF (200')	130)	
	120)	
RIVETING MACHINE	110	ROCK MUSIC BAND
EMERGENCY ENGINE-GENERATOR (6') DC-10 FLYOVER (700')	100	PILE DRIVER (50')
SUBWAY TRAIN (20')	90	BOILER ROOM PRINTING PRESS PLANT
PNEUMATIC DRILL (50')	80	GARBAGE DISPOSAL IN HOME (3') INSIDE SPORTS CAR, 50 MPH
FREIGHT TRAIN (100') VACUUM CLEANER (10') SPEECH (1')	70	
	60	AUTO TRAFFIC NEAR FREEWAY LARGE STORE ACCOUNTING OFFICE
LARGE TRANSFORMER (200')	50	PRIVATE BUSINESS OFFICE LIGHT TRAFFIC (100') AVERAGE RESIDENCE
	40	MINIMUM LEVELS, RESIDENTIAL AREAS IN SAN FRANCISCO AT NIGHT
SOFT WHISPER (5')	30	
RUSTLING LEAVES	20	RECORDING STUDIO
	10	
THRESHOLD OF HEARING IN YOUTHS (1000-4000 Hz)	0	

NOTE: The distance (in feet) between the source and listener is shown in parenthesis.

Figure A-1: TYPICAL SOUND LEVELS MEASURED IN THE ENVIRONMENT AND IN INDUSTRY

As it is often cumbersome to describe the noise environment with these statistical descriptors, a single number descriptor called the L_{eq} is becoming widely used. The L_{eq} is defined as the equivalent steady-state sound level which in a stated period of time would contain the same acoustic energy as the time-varying sound level during the same time period. The L_{eq} is particularly useful in describing the subjective change in an environment where the source of noise remains the same but there is change in the level of activity. Widening roads and/or increasing traffic are examples of this kind of situation.

In determining the daily measure of environmental noise, it is important to account for the difference in response of people to daytime and nighttime noises.

During the nighttime, exterior background noises are generally lower than the daytime levels. However most household noise also decreases at night and exterior noises become very noticeable. Further most people are sleeping at night and are very sensitive to noise intrusion.

To account for human sensitivity to nighttime noise levels a descriptor L_{dn} (day-night equivalent sound level) was developed. The L_{dn} divides the 24-hour day into the daytime of 7 am to 10 pm and the nighttime of 10 pm to 7 am. The nighttime noise level is weighted 10 dB higher than the daytime noise level. The L_{dn} then is the A-weighted average sound level in decibels during a 24-hour period with a 10 dB weighting applied to nighttime. For higway noise environments the L_{eq} during the peak traffic hour is approximately equal to the L_{dn}.

The effects of noise on people can be listed in three general categories:
1) subjective effects of annoyance, nuisance, dissatisfaction;
2) interference with activities such as speech, sleep, learning;
3) physiological effects such as startle, hearing loss.

The sound levels associated with environmental noise, in almost every case, produce effects only in the first two categories. Unfortunately, there is as yet no completely satisfactory measure of the subjective effects of noise, or of the corresponding reactions of annoyance and dissatisfaction. This is primarily because of the wide variation in individual thresholds of annoyance, and habituation to noise over differing individual past experiences with noise (Stevens _et al_ 1955).

Thus, an important parameter in determining a person's subjective reaction to a new noise is the existing noise environment to which one has adapted: the so-called "ambient" noise. "Ambient" is defined in the San Francisco Noise Ordinance as "the all-encompassing noise associated with a given environment, being a composite of sounds from many sources, near and far" (S. F. Municipal Code 1972). In general, the more a new noise exceeds the previously existing ambient, the less acceptable the new noise will be judged by the hearers (Galloway _et al_ 1969).

With regard to increases in noise level, knowledge of the following relationships will be helpful in understanding the quantitative sections of this report (Stevens _et al_ 1955, Beranek 1954):

a) Except in carefully controlled laboratory experiments, an increase of only one dB in A-level cannot be perceived.
b) Outside of the laboratory, a three-dB increase in A-level is considered a just-noticeable difference.

c) A change in A-level of at least five dB is required before any noticeable change in community response would be expected.

d) A ten-dB increase in A-level is subjectively heard as approximately a doubling in loudness, and would almost certainly cause an adverse change in community response. Increases of more than ten decibels would be expected to provoke complaints.

II. Noise Measurement Survey

Noise levels were measured for 15 minutes at each location with a Bruel and Kjaer (B&K) 4426 Noise Level Analyzer and B&K 4165 Condensor Microphone. The 4426 samples the noise environment every 0.1 seconds for the duration of the measurement and automatically calculates the desired statistical descriptors and the equivalent sound level. The microphone was fitted with a windscreen and the system was calibrated before and after the survey with a B&K 4230 Sound Level Calibrator.

During the survey the weather was typical for the western regions of San Francisco. The sky was occasionally clear but was frequently overcast with fog. The temperature ranged from 50°F to 65°F and the wind varied from calm to 10 mph.

Noise measurements were conducted at four locations in and adjacent to this project site on 11-13 January 1977 and 4-7 August 1978.

Bibliography

Beranek, L.L. Acoustics. New York: McGraw-Hill, 1954.

Botsford, J.H. "Using Sound Levels to Gauge Human Response to Noise." Sound and Vibration, 3(10):16-28 (1969).

Gallaway, W.J., et al. "Urban Highway Noise: Measurement, Simulation, and Mixed Reactions." National Cooperative Highway Research Program, Report 78 (1969).

Gordon, C.G., et al. "Highway Noise-A Design Guide for Highway Engineers." National Cooperative Highway Research Program, Report 117 (1971).

Griffiths, I.D., and F.J. Langon. "Subjective Response to Road Traffic Noise." Journal of Sound and Vibration, 8(1):16-32 (1968).

Hillquist, R.K. "Objective and Subjective Measurement of Truck Noise." Sound and Vibration, 1(4):8-13 (1967).

Kittelson, K.E., and C. Poulsen. "Statistical Analysis of Sound Levels. " Bruel & Kjaer Technical Review, 1:3-23 (1964).

Olson, N. "Statistical Study of Traffic Noise." Ottawa: National Research Council of Canada, Report APS476, N.R.C. 11270 (1970).

Parkin, P.H. "On the Accuracy of Simple Weighting Networks for Loudness Estimates of Some Urban Noises." Journal of Sound and Vibration, 2(1):86-88 (1964).

San Francisco Municipal Code. Part II, Chapter VIII, Section 1, Article 29. Noise Abatement and Control Ordinance (1972).

Scholes, W.E. "Traffic Noise Criteriz." Applied Acoustics, 3(1):1-21 (1970).

Stevens, K.N., et al. "A Community's Reaction to Noise:Can It Be Forecast?" Noise Control, 1:63 (January 1955).

APPENDIX C

MICROCLIMATE ANALYSIS

I. INTRODUCTION

Architects, engineers, and city planners designing urban structures are limited by the lack of information on wind effects brought on by the presence of these structures, such as discomfort for pedestrians and wind-caused mechanical problems with doors, windows, and ventilating systems. Once a structure is built, remedial measures (if they exist at all) are usually very expensive.

It is virtually impossible to anticipate, by analysis or intuition, the winds that will be caused by a structure, since they are determined by very complex interactions of forces. Fortunately, it is possible to predict the wind patterns and pressures around structures by testing scale models in a wind tunnel that can simulate natural winds near the ground. This allows the designer to foresee possible environmental and mechanical problems and alleviate them before the building in erected.

Data from wind tunnel tests can be combined with climatological data to analyze the effect of a proposed structure on pedestrians in terms of human comfort. The frequency distribution of wind strengths at pedestrian level, combined with temperature data and shadow patterns of the proposed structure and its surroundings, can be used to forecast comfort at pedestrian levels.

II. SUMMARY

A wind tunnel test was conducted on a model of the proposed project site, based on drawings prepared by the architect. Because the site currently is unoccupied and access is restricted, tests were not made on the site as it currently exists.

The study results indicated that the east-west orientation of buildings on the site tended to accelerate winds between the buildings, but, because of extensive landscaping planned, these winds would be less than those in an open, exposed location. The proposed pedestrian walkway, an extension of Cabrillo Street, was found to have little shelter from the wind.

The retail mall generally would be sheltered from westerly winds by intervening buildings, but high winds would occur during northwest winds, where the mall meets Balboa Street. These winds are caused by the channeling effect of the hillside north of Balboa Street.

III. SITE DESCRIPTION

The project site is a 10-acre parcel adjacent to the Great Highway at the site of the old Playland-at-the-Beach amusement park. The site is separated from Ocean Beach by the Great Highway, and is exposed to winds from off the Pacific. A northwest-southeast oriented hill, a part of Sutro Heights, occupies the area directly north of the site. With the exception of Parcel 4, the site is relatively flat.

The proposed project is a residential/commercial development. Six residential complexes are located along the Great Highway, with a maximum height of 40 feet above grade (see Figure 1). Open-space areas are provided between these buildings. The westerly extension of Cabrillo Street is proposed as a pedestrian walkway through the site. A commercial/residential building and mall are proposed along the extension of La Playa Street between Cabrillo and Balboa Streets.

Development of Parcel 4, north of Balboa Street, is uncertain. The wind tunnel tests were performed with this parcel as it now exists.

IV. MODEL AND WIND TUNNEL FACILITIES

Model

A scale model of the proposed building and nearby structures was constructed of polystyrene and urethane foams, using blue-line prints supplied by the architect. Vegetation and amenities were included as indicated on site plans. The model scale was one inch equals 40 feet.

Wind Tunnel Facilities

The Environmental Impact Planning Corporation boundary layer wind tunnel was designed specifically for testing architectural models. The working section is 7 feet wide, 43 feet long, and 5 feet high. Wind velocities in the tunnel can be varied from 3.5 miles per hour to 13 miles per hour. The flow characteristics around sharp-edged objects such as architectural models are constant over the entire speed range. Low speeds are used for photographing tracer smoke, high speeds for windspeed measurements.

Simulation of the characteristics of the natural wind is facilitated by an arrangement of turbulence generators and roughness upwind of the test section. These allow adjustments in wind characteristics to provide for different scale models and varying terrain upwind of the project site.

Measurements of windspeed around the model are made with a hot-wire anemometer, a device that relates the cooling effect of the wind on a heated wire to the actual windspeed. The flow above the city is measured by a Pitot tube connected to a micromanometer. The Pitot tube and micromanometer measure directly the pressure differences between moving and still air. This pressure difference is then related to the actual windspeed.

V. TESTING METHODOLOGY

Simulation of Flow

The most important factors in assuring similarity between flow around a model in a wind tunnel and flow around the actual building are the structure of the approach flow and the geometric similarity between the model and the prototype. A theoretical discussion of the exact criteria for similarity is not included in this paper, but may be found elsewhere (Cermak 1966, or Cermak and Arya 1970).

The variation of windspeed with height (wind profile) was adjusted for the scale of the model and the type of terrain upwind of the site. The profiles used were those generally accepted as adequately describing the flow over that type of terrain (Lloyd 1967).

Testing Procedure

The windflow characteristics of the site in its present state were investigated to ascertain the present wind environment. Windspeeds and wind directions at specified points throughout the site were measured and recorded. Wind direction was measured by releasing smoke at each point and recording the direction in which the smoke traveled. Windspeed measurements were made at the same points, at a scale height of five feet above the ground. A hot-wire anemometer probe is required to make these measurements within a fraction of an inch of the model surfaces. The probe is repeatedly calibrated against the absolute reading of a Pitot tube and micromanometer. Velocity readings close to the model are generally accurate to within 10% of the true velocity.

A similar technique was used to measure the wind environment with the proposed building in place. Measurements were taken around the building and on the adjacent streets.

Before and after each test run, a calibration measurement was made above the model. The purpose of these measurements was to provide a reference to allow comparison between measurements made for different wind directions.

VI. TEST RESULTS AND DISCUSSION

The method of analysis of wind tunnel measurements used in this study is different from that previously used for City projects. Other projects tested in the wind tunnel for San Francisco were highrise buildings in the downtown area. For these projects, measured winds were related to weather records of the downtown San Francisco Weather Service Station, at 50 Fulton Street. Data from this weather station, located several miles inland within the urban complex, are not applicable to the project site.

The study approach taken was to relate measured winds to the undisturbed wind as it comes off the ocean. Use of a typical wind profile over oceans allows calculation of a reference velocity at a height of five feet. When wind tunnel measurements are divided by this reference velocity, the effect of the project in accelerating winds or providing shelter is clearly defined.

Wind data for the site under northwest and west wind conditions are shown in Figures 1 and 2. Plotted data are the ratio of measured winds to the reference velocity, as a percent. Thus, a plotted value of 110 represents a 10% acceleration of the natural wind, caused by the orientation or location of structures or vegetation. A plotted value of less than 100 represents a deceleration, or sheltering, due to the project.

West Winds

West winds occur between 15% and 40% of the time in San Francisco, depending on the season. (In meteorology, a west wind blows from the west.) They exceed 13 miles per hour 29% of the time and 25 miles per hour 7% of the time during summer. Wind strengths and frequencies are somewhat lower in spring, fall, and winter.

Figure 1 shows measured wind speeds for west winds. Along the east side of the Great Highway, values vary from 60% to 81% of the natural wind. This is partially due to the effect of the seawall and additional friction of windflow over land. Within the residential portions of the project, the wind accelerates 10% between buildings. This is due to the narrowing of the gap between the buildings, resulting in a funneling effect. The magnitude of this effect is limited, however, because of the low-rise nature of the buildings.

A similar effect is seen at the pedestrian extension of Cabrillo Street. Winds are higher here, due to the openness of the passageway. The highest winds on the site occur at this location, with an acceleration of 10% over the natural wind.

The retail mall is behind residential buildings and, therefore, sheltered. Opposite the gaps in these buildings, winds are higher, but still well below the natural wind.

A strong topographical effect was found in Parcel 4. The hillside redirects the wind in a northwesterly direction. Along Balboa Street, at the southern end of the hillside, winds are accelerated above natural levels.

Northwesterly Winds

Northwest winds occur 12% to 39% of the time in San Francisco, depending on the season. Northwesterly and westerly winds are the most frequent and strongest winds during all seasons in the City. In summer, northwest winds exceed 13 miles per hour 35% of the time, and 25 miles per hour 3% of the time. Wind frequencies and speeds are lower in spring, fall, and winter.

Northwesterly winds are shown in Figure 2. Winds along the east side of the Great Highway are higher than west winds, apparently due to the blockage of winds by residential buildings in the project. Wind strengths in this area range from 71% to 99% of the natural wind.

Because the gaps between the buildings are not aligned with northwest winds, the northwest winds affecting pedestrian spaces in the residential areas are lower than west winds; "funneling" effects shown for west winds do not occur.

The retail mall area remains sheltered for northwesterly winds, although speeds are higher than for westerly winds. In this area, winds are turbulent.

The hillside in Parcel 4 is aligned with the wind in a northwesterly direction, resulting in wind accelerations along the base of the hill. This flow continues across Balboa Street, and affects the north end of the retail mall at Balboa Street.

VII. MITIGATION MEASURES

The east-west orientation of the buildings on the site allows a free flow of wind across the site, and the shape of the buildings tends to funnel winds in the gaps between buildings. This orientation is primarily to maximize views from the site. Reorientation of buildings to north-south or a change in building shapes to avoid a funneling effect would reduce winds on the site, but these measures would restrict views from residential units.

The model tested included extensive trees on the site. Pedestrian areas could be further protected from the wind by hedges or windbreaks oriented north-south. Again, if these were tall, they would obstruct views.

Use of hedges or windbreaks would appear to be most useful in the pedestrian extension of Cabrillo Street. In the current plan, vegetation is limited to trees on either side of the walkway.

The need for emergency fire access along the pedestrian extension of Cabrillo Street limits available methods of providing shelter. Curving the pathway is one way of maintaining fire access, while still allowing use of landscaping to provide shelter from the wind.

Development of Parcel 4 would provide shelter for the north end of the retail mall. If this area is not to be developed, a windbreak of trees and/or hedges could be used to mitigate winds at the north end of the retail mall and along Balboa Street.

BIBLIOGRAPHY

Arens, E. A. 1972. "Climatic factor in planning and environmental design." Ph.D. thesis, University of Edinburgh.

Cermak, J. E., et al. 1966. Simulation of atmospheric motion by wind tunnel flows. Colorado State University.

_______, and Arya, S. P. 1970. "Problems of atmospheric shear flows and their laboratory simulation." Journal of Boundary-Layer Meteorology, September 1, 1970, pp. 40-60.

Lloyd, A. 1967. "The generation of shear flow in a wind tunnel." Quarterly Journal of the Royal Meteorological Society, 93 (395): 79-96.

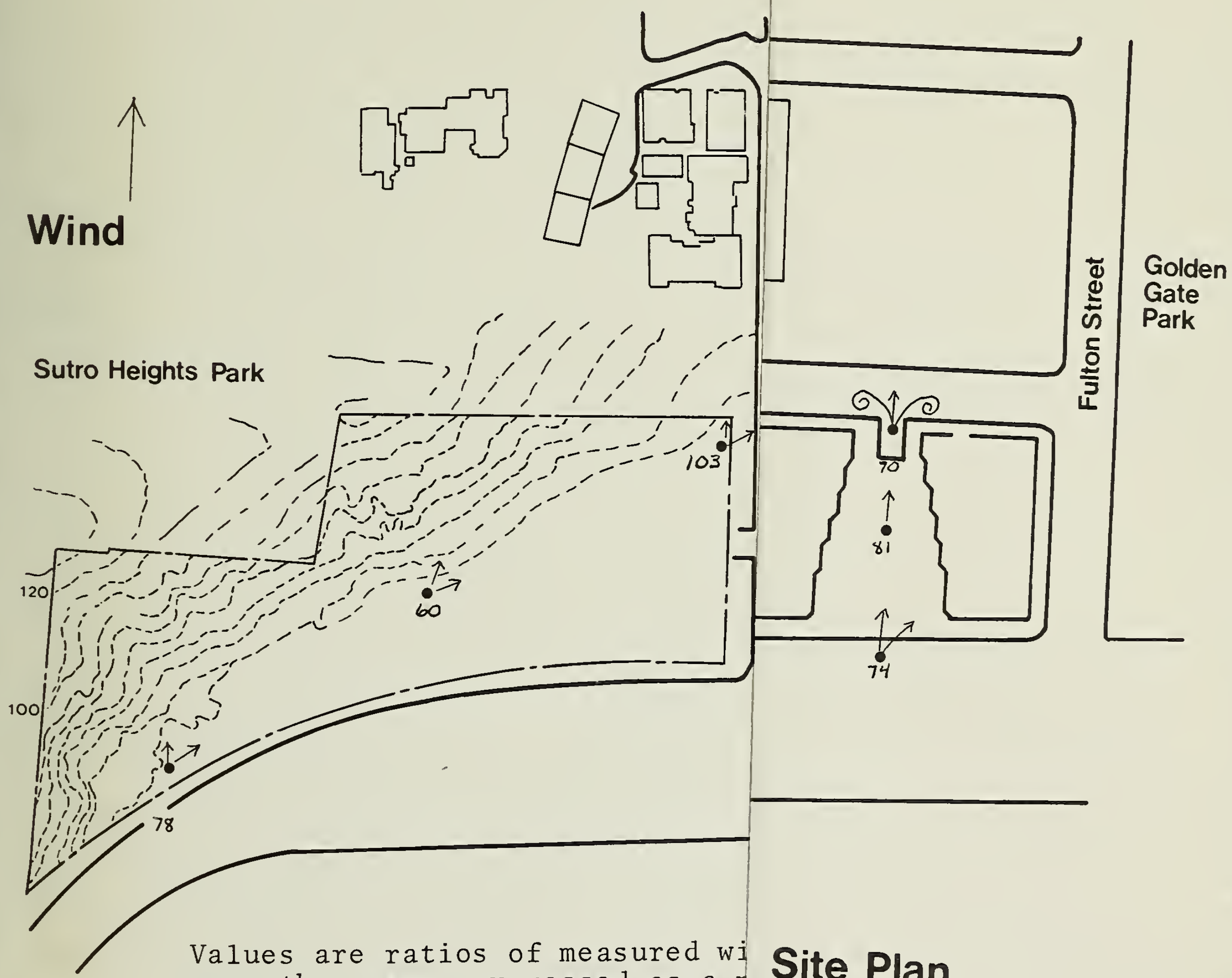
Pacific Gas and Electric Company. 1967. Mean hourly temperatures for Northern California.

Penwarden, A. 1973. "Acceptable windspeeds in towns." Journal of Building Science, 8, 259-267.

U. S. Department of Commerce. 1970a. Local climatological data, San Francisco International Airport.

________. 1970b. Local climatological data, San Francisco Federal Building.

________. 1968. Terminal forecasting reference manual, International Airport, San Francisco, California, October.



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Site Plan

Proposed Site - Wind Flo
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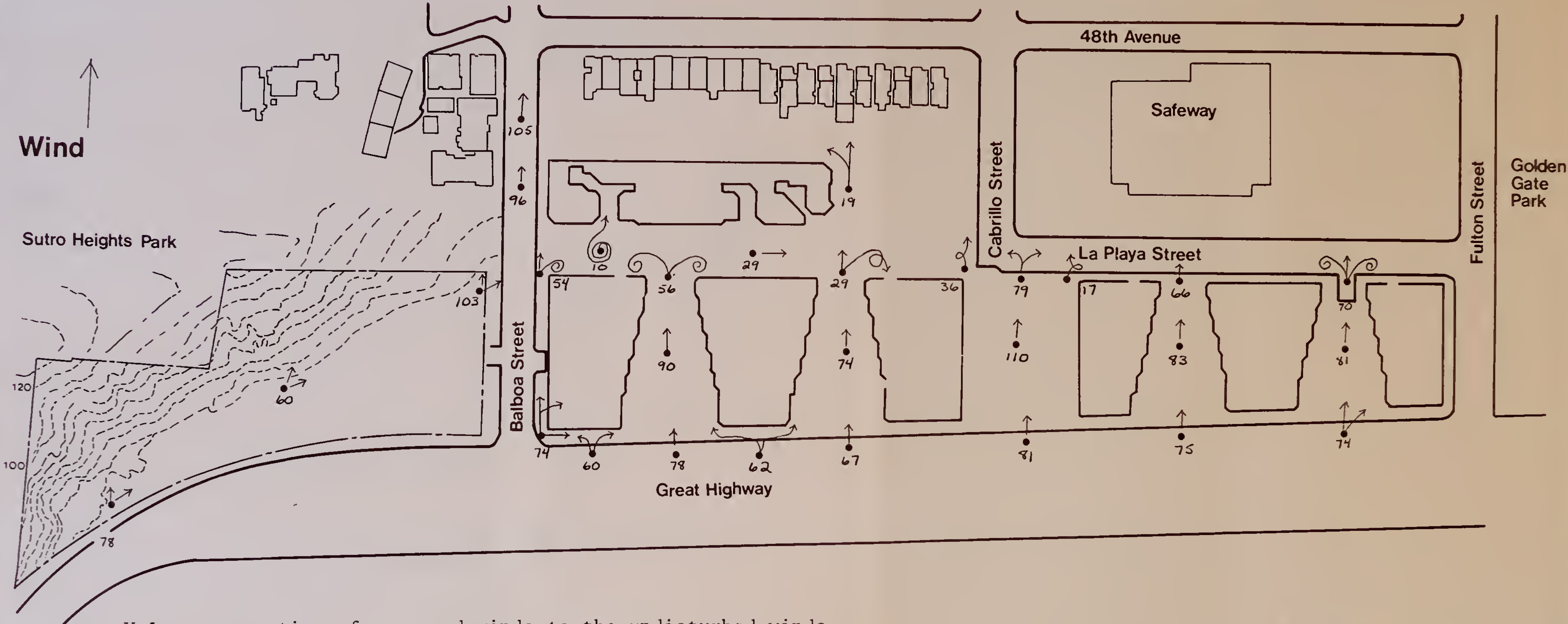
Figure No.C-1



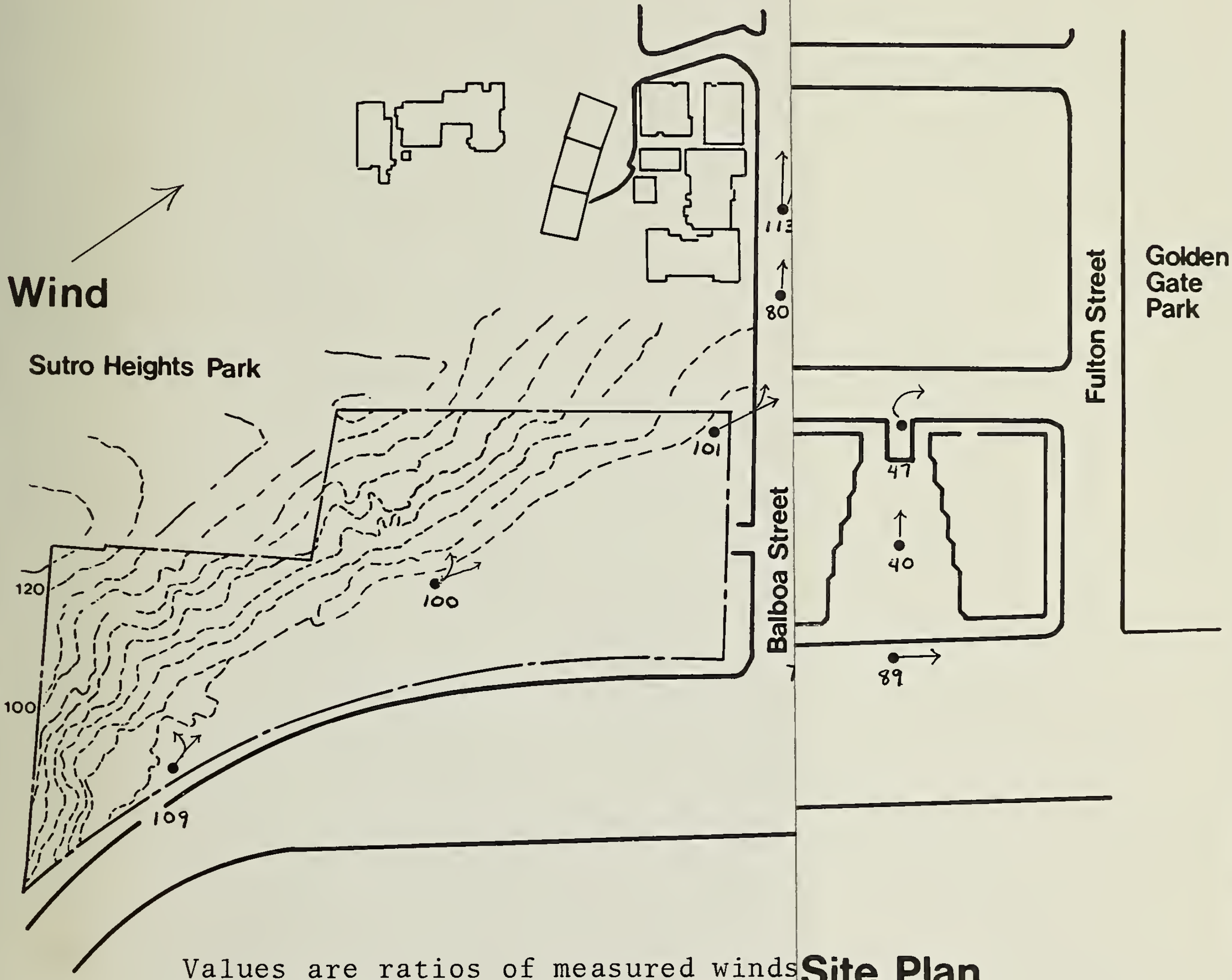
Values are ratios of measured winds to the undisturbed winds over the ocean, expressed as a percent. A value of greater than 100 represents an acceleration; less than 100 represents shelter.

Proposed Site - Wind Flow Patterns, West With Proposed Ground Cover No Development on Parcel No. 4

0 25 50 100
Scale Feet

North

Figure No.C-1



Values are ratios of measured winds
over the ocean, expressed as a perc
than 100 represents an acceleration

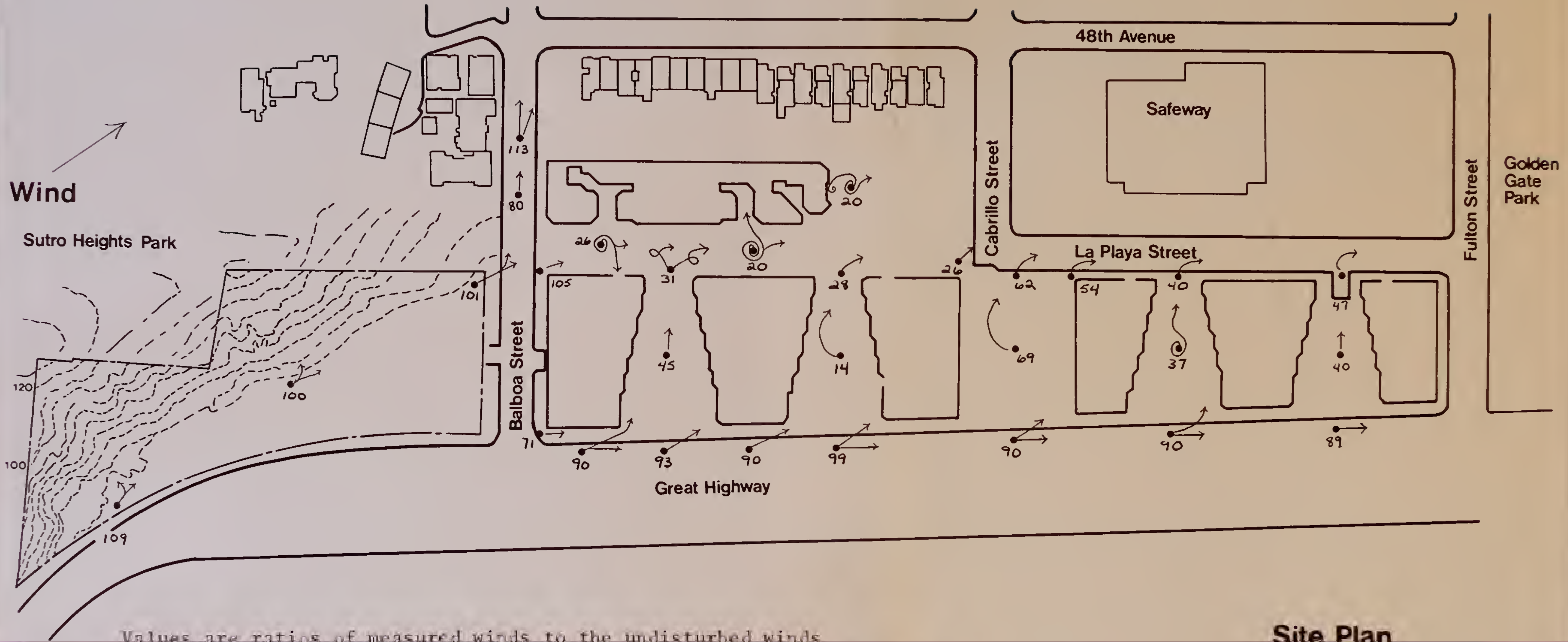
Site Plan

Proposed Site - Wind Flow
With Proposed Ground Cov
No Development on Parcel

0 25 50 100
Scale Feet

North

Figure No. C-2



Values are ratios of measured winds to the undisturbed winds over the ocean, expressed as a percent. A value of greater than 100 represents an acceleration; less than 100 represents shelter.

Proposed Site - Wind Flow Patterns, Northwest With Proposed Ground Cover No Development on Parcel No. 4

Figure No. C-2